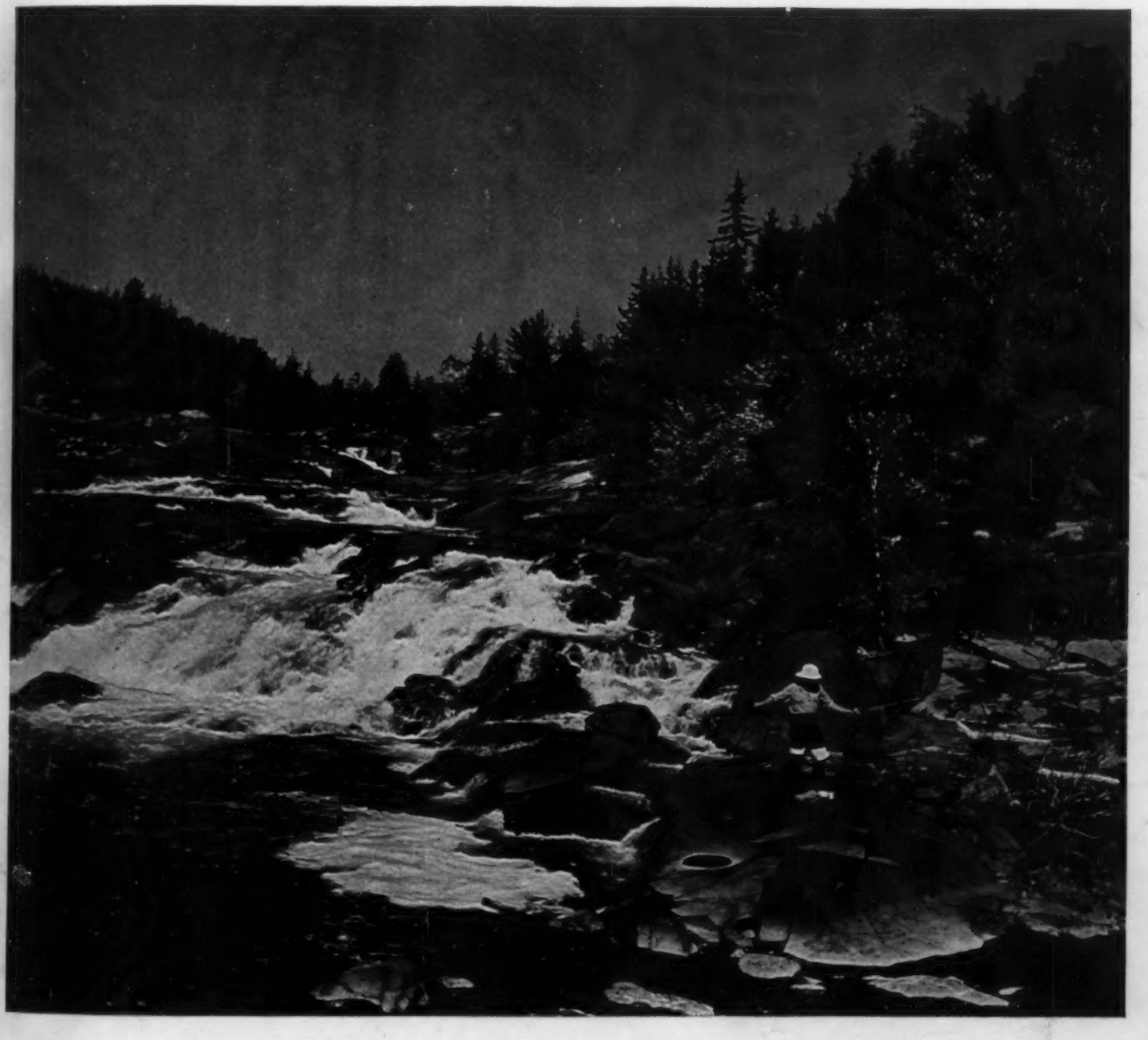
CANADIAN GEOGRAPHICAL JOURNAL



THE CANADIAN GEOGRAPHICAL SOCIETY

OTTAWA, CANADA

The Society's ambition is to make itself a real force in advancing geographical knowledge, and in disseminating information on the geography, resources and people of Canada. In short, its aim is to make Canada better known to Canadians and to the rest of the world.

As one of its major activities in carrying out its purpose, the Society publishes a monthly magazine, the Canadian Geographical Journal, which is devoted to every phase of geography—historical, physical and economic—of Canada, of the British Commonwealth and of the other parts of the world in which Canada has special interest. It is the intention to publish articles in this magazine that will be popular in character, easily read, well illustrated and educational to the young, as well as informative to the adult.

The Canadian Geographical Journal will be sent to each member of the Society in good standing. Membership in the Society is open to any one interested in geographical matters. The annual fee for membership is four dollars (Canadian currency)

The Society has no political or other sectional associations, and is responsible only to its members. All money received is used in producing the Canadian Geographical Journal and in carrying on such other activities for the advancement of geographical knowledge as funds of the Society may permit.

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The articles in this Journal are indexed in the *Canadian Index* which may be found in any public library.

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COVER SUBJECT:—*"Comes the call of waters flowing"*

Ontario Dept. of Lands and Forests photograph.

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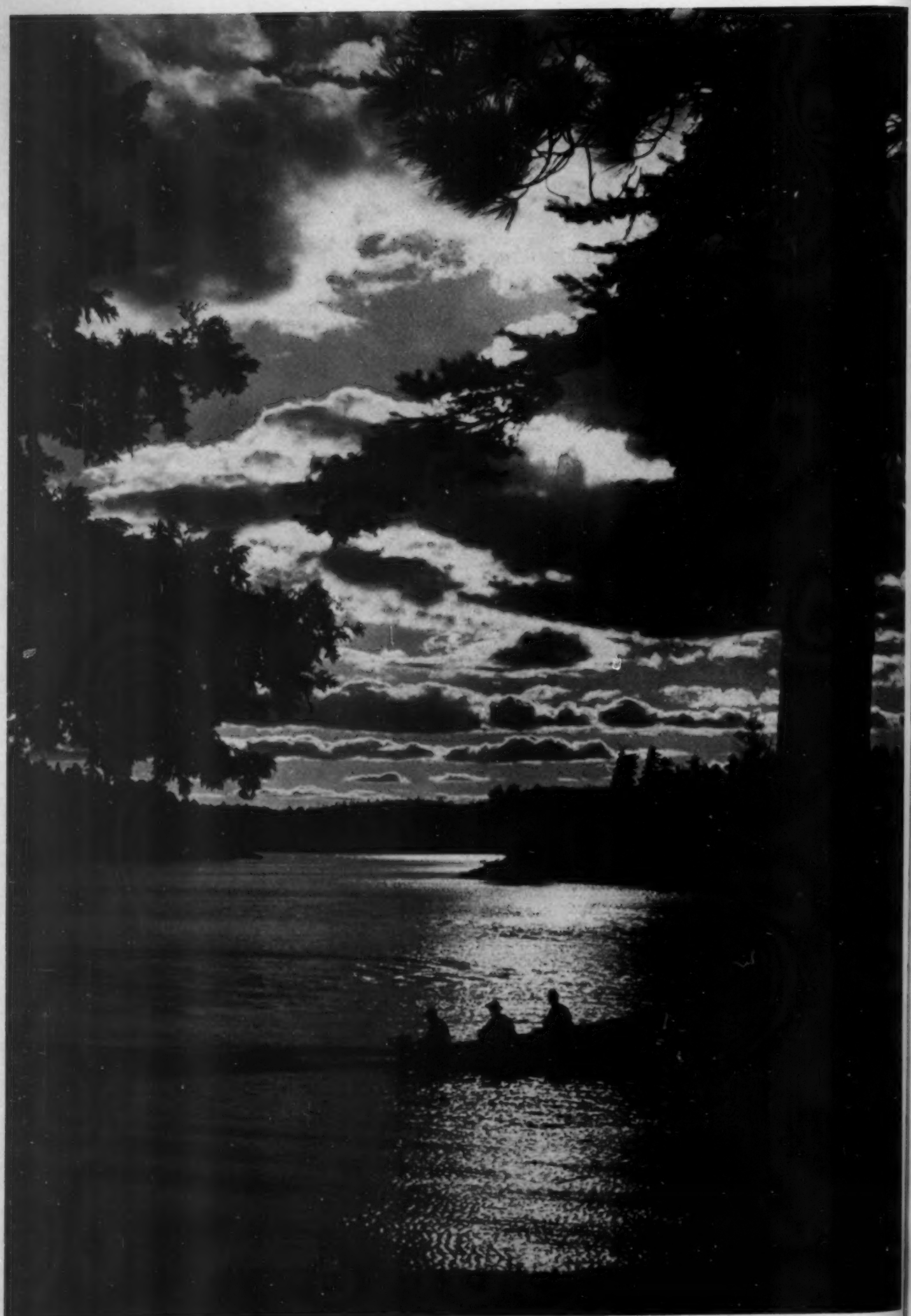


Fish and Wildlife Management in Ontario

by W. J. K. HARKNESS*

Ontario Dept. of Lands and Forests photographs.

PROBABLY THE FIRST natural resources to be utilized by man in the land now known as Ontario were the fish and wildlife. Early white explorers found that the Indians inhabiting the shores of the lower Great Lakes grew corn but that the inland tribes of the upper Lakes depended wholly on wild food. The first white settlers took up where the Indians left off but, whereas many citizens today trap fur-bearing animals and net fish for profit, the great majority—freed from dependence on fish and game by agriculture—hunt and fish only for pleasure.

Few pioneers foraged far from home, but improved transportation facilities now permit adventuring deep into the hinterlands for sport and recreation so satisfactory that—since the turn of the century, as the word spread—visitors from abroad have come in increasing thousands to share the fun. Since the late war, this influx has gained such proportions that the province is subject to intense hunting and fishing pressure. Ontario must now manage its fish and wildlife resources with strict efficiency or lose their benefits.

From about thirty-five to twenty thousand years ago, in the Pleistocene period, Ontario was covered with glacial ice 3,000 feet deep. When the immense glacier began to melt away great seas formed and inundated an area much larger than the Great Lakes. At various stages of the icefield's recession broad catchment areas were gouged resulting notably, so far as Ontario is concerned, in the establishment of the Atlantic drainage basin which drains most of Ontario via the Great Lakes and the St. Lawrence River, and the Hudson Bay basin, parts of which drain the western and northern parts of the province through tributary waters via James Bay.

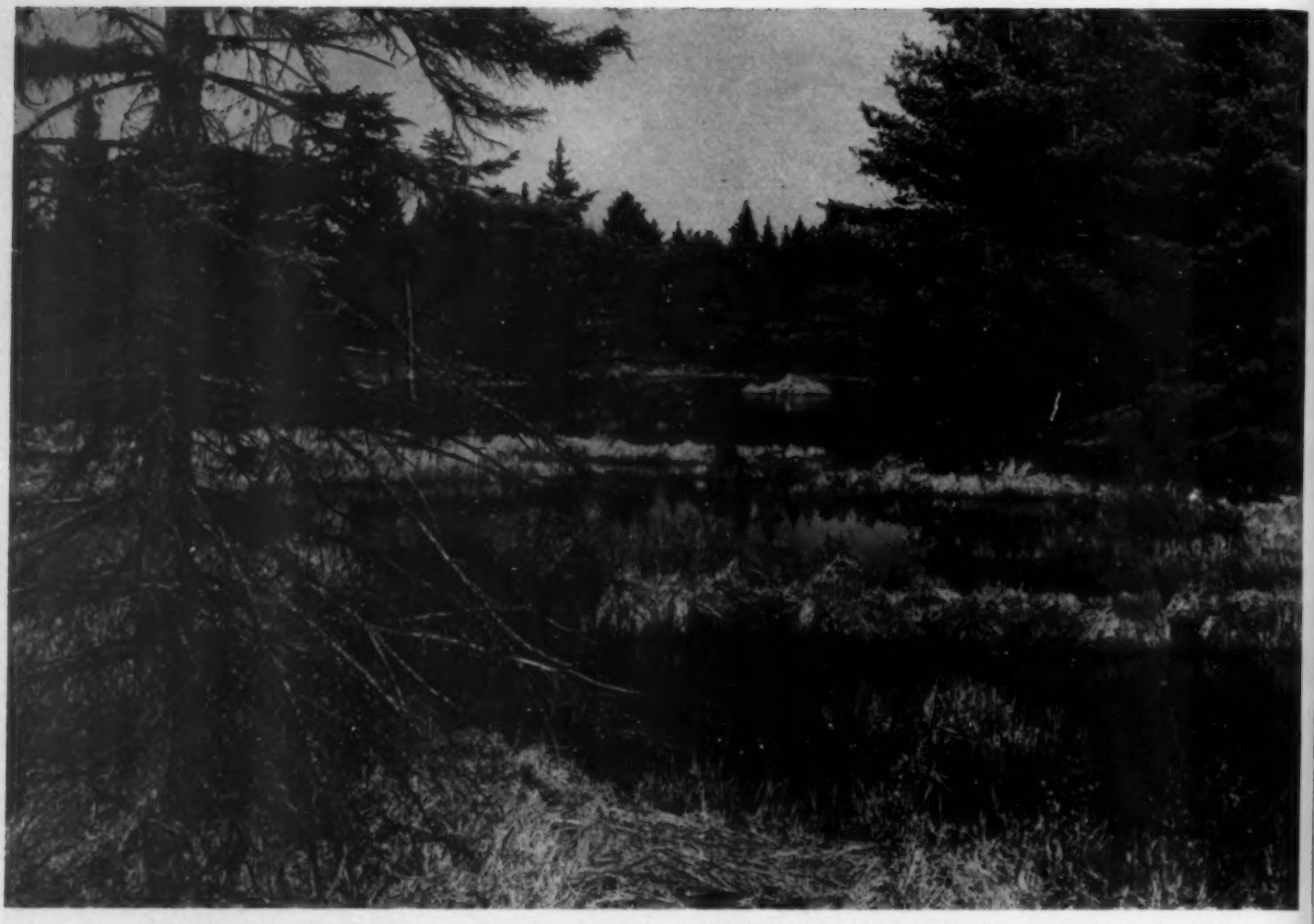
Climatic conditions improved as the vast ice mass retreated and many varieties of plant and animal life moved in, principally from the upper Mississippi valley and the middle Atlantic coastal plain. No fish had survived the period but, as the waters warmed, many varieties entered through various channels. Ecological barriers, changing climate, and receding waters subsequently limited or halted the spread of many types and brought about the extinction of others; only the hardier, more adaptable species remained to establish fish populations in the lakes and streams we now know.

Now, Ontario's surplus waters are carried to the Atlantic Ocean largely via the St. Lawrence River. All southward drainage, such as obtained in glacial times, has ceased. Constructions like the Chicago Drainage canal have, however, upset fish geography and permitted unwelcome species of fish to enter Lake Michigan. Similarly, the Trent and Welland canals have eliminated Niagara Falls as a natural barrier and allowed the alewife and sea lamprey to penetrate the upper Great Lakes.

Ontario's lakes and rivers cover an estimated 80,000 square miles, including the Canadian portion of the Great Lakes, Ontario, Erie, Huron, and Superior. Of the several hundred thousand other lakes only about 40,000 have been named. Many large bodies of water—Georgian Bay, a large part of Lake of the Woods, Rainy Lake, Nipigon, Nipissing and Simcoe—lie inland and there are thousands of smaller but equally well-known lakes such as the Rideaus, Muskoka and Timagami. In northern Ontario an incalculable number of inland water-ways span the Precambrian Shield in an almost continuously connected series of catch basins ranging in size from mere ponds to large lakes. Rated as the finest natural reservoir system in the world, Ontario's lakes and streams maintain water tables, stimulate the distribution of moisture over the land, and provide power for enormous hydro developments.

* With grateful acknowledgment to the following for their valuable assistance: Dr. C. H. D. Clarke, Supervisor of Wildlife Management; Dr. H. H. MacKay, Supervisor of Game Fish and Hatcheries Management; W. H. R. Werner, Supervisor of Commercial Fisheries; J. Farrington, Supervisor of Enforcement; and H. G. McKinley, Statistics.

Anglers rise at dawn and hasten to favourite fishing spots for a day of fine sport



The beauties of nature are displayed in unspoilt peacefulness for all who visit Algonquin Park. The islet in the distant pond is a beaver lodge.

Crown Lands for Recreation

The southern part of Ontario's 412,582 square miles is now densely peopled but in the north great tracts of wild land and water remain open for recreational use. These are Crown Lands which have not yet been alienated by private ownership. Some Crown Lands, of course, have been set aside as provincial parks, forests and game preserves where fishing is permissible but no hunting or trapping is allowed.

Best known of Ontario's wilderness parklands is Algonquin Provincial Park, about 175 miles north of Toronto. In its 2,741 square miles countless wild birds and animals of many species live undisturbed by man. It is a mecca for nature lovers. Artists place its beauties on canvas; photographers perpetuate its lovely panoramas on film, and anglers haunt its well-stocked lakes and streams.

In 1953, for the ninth consecutive year, the Algonquin Park Nature Program was repeated. Three biologists were in attendance, and five Nature Trails with labelled flora were open. Between June 30th and October 25th more than 14,000 hikers traversed these trails unconducted and some 700 attended 29 conducted hikes. Altogether, during the summer, over 18,000 people participated in some way in the program. More than 28,000 visitors stopped at the new Park Museum to hear about and see the displays of native plants, fish, amphibians, reptiles, birds, and animals. Since the program's inception in 1944, when Prof. J. R. Dymond, at the request of the Department of Lands

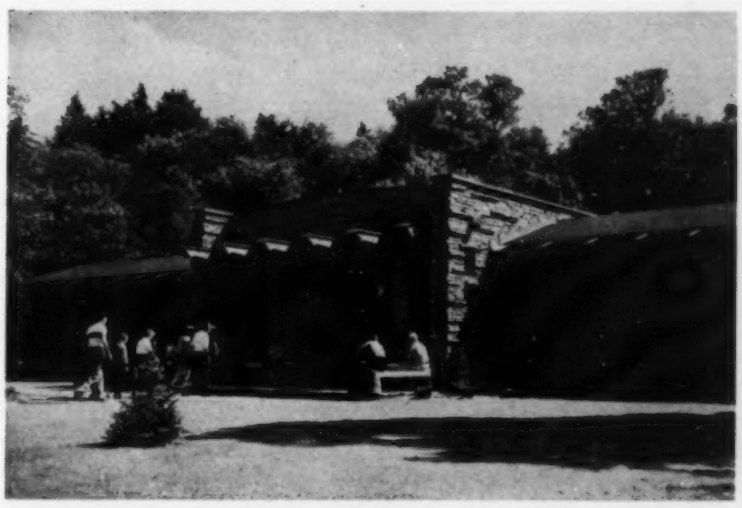
and Forests, took Smoke Lake campers on nature hikes, almost 100,000 people of all ages have enjoyed some phase of this conservation education effort.

During the summer, the Nature Trails staff visited boys and girls camps and summer lodges in the Park to tell and show, with the aid of colour slides and movies, the many fascinating things met with in the area. The biologists also gave advanced instruction to four camp counsellor groups, to members of the Toronto Metropolitan Boy Scouts Association, U.S.A. Air Cadets, Smoke Lake Nature Club, the Junior Farmers Association camp at Lake Couchiching, and to teachers attending Conservation Workshop at the Ontario Forest Ranger School at Dorset.

Throughout the program, forest fire prevention is emphasized and every effort is made to interpret the natural environment—the interdependence of the soils, waters, forests and fish and wildlife. There is much evidence that when hunters, anglers and others understand the inter-relationship of these natural resources they have a greater appreciation of what is required of them (and of management) to protect and maintain their chosen recreational facilities, and will act accordingly.

So, through this project, we learn something of, but still cannot measure fully, the great influence the mere presence of wildlife has in drawing all sorts of people to Ontario's forests and lakeland areas. Equally impossible to calculate are the benefits to agriculture, forestry and water conservation of the myriads of wild birds and animals of many species, from humming bird to eagle, from tiny shrew to lordly moose. We do know, however, that they exist to help maintain a balance in Nature and that they are extremely important in our provincial economy.

How important? Well, Ontario's wild fur crop grossed over $3,600,000 in a single year and commercial fishing more than $7,000,000. In 1952, 268,444 residents hunted small game, 96,970 hunted deer and 3,620 hunted moose. How many residents "go fishin'" each year can only be guessed at—they need no licence—but, in 1952, non-residents purchased 284,397 angling licences which meant close to



The Algonquin Park Museum contains exhibits of local flora and fauna, and a small laboratory.

A park naturalist explains the characteristics of a snapping turtle to a group of fascinated young visitors — taking care to keep his hands away from the dangerous head.

Sweet-scented water lilies unfold their petals in a pond by one of the nature trails.

A likely looking rapid, a carefully chosen lure —

— and an angler's dream comes true as a fine trout takes the hook.

$2,000,000 in new money to spread around; and those who used them paid another $2 to $8 each for boats and $8 for guides, per day. Visiting hunters may spend up to $350 more than the average tourist on a single deer hunting trip and up to $1,000 more to kill a moose.

Angling

"Fishing, at best, is a solitary vice," Lord Byron wrote, "and whether on a padded boat cushion or amidst the infinite discomfort of some fly-infested, riotous, mountain stream, the angler is achieving release from the familiar monotonies of civilized life which could not, this side of the last river, be much more complete."

From spring to Indian summer, the people of Ontario and their friends enjoy this popular sport, the chief attraction of which lies not alone in the great variety of fighting fish available but in the beautiful landscapes to be seen. Even those who return from a fishing trip empty-handed have cherished memories of pleasant surroundings, the mental tonic of peaceful hours spent in hopeful vigilance and the privilege of exercising the imagination. In the estimation of the Department of Lands and Forests, however, patience need not necessarily remain forever its own reward. By research, investigation, and good management, this government agency believes that the angler may be rewarded more tangibly and, to his satisfaction, more often, with reasonably successful catches.

In the Great Lakes and the more strictly inland waters there are over 144 species and subspecies of North American freshwater fishes. Native game species include the highly prized lake trout, speckled trout, black bass, maskinonge, pike-perch (wall-eye), and pike. Introduced varieties include ouananiche from Lake St. John in Quebec, Atlantic salmon from the Miramichi River in New Brunswick, Kamloops trout from British Columbia, and brown trout and carp from Europe. Minnows of several kinds though of no direct value may serve as food for more valued species and as bait.

Salmon and trout probably provide more

open air exercise than any other game fish family. A leaping salmon is a furious plaything indeed. When fighting light tackle his upward lunges compare with the muskie's and he may hurl his body several feet clear of the water. Atlantic salmon at one time abounded in Lake Ontario and its tributaries which they ascended mostly in the fall though some were known to enter the Don, Humber and Credit Rivers, near Toronto, early in the year and were taken regularly in March.

Proof? In the Toronto Gazette of May 16th, 1798, the following advertisement appeared: "To be sold at public auction in the Town of York, a valuable farm situated on Yonge Street about twelve miles from York, on which is a good log house and seven or eight acres improved. The advantage of the above farm from richness of soil to being well-watered is not equalled by many farms in the Province; and above all it affords an excellent salmon fishery large enough to support several families, which must be conceded a great advantage in this infant country. Terms will be made known on the day of sale." A map of York County will reveal the farm's location near Thornhill on the headwaters of the Don.

In those days salmon were so plentiful in the lake and its tributaries that contracts between farmers and hired men contained a clause stating that the men would not have to eat fish more than two or three times a week. Between 1870-80, however, salmon populations declined rapidly and in 1897 a few lone individuals were noted in Wilmot Creek, at Newcastle. There are no authentic subsequent records.

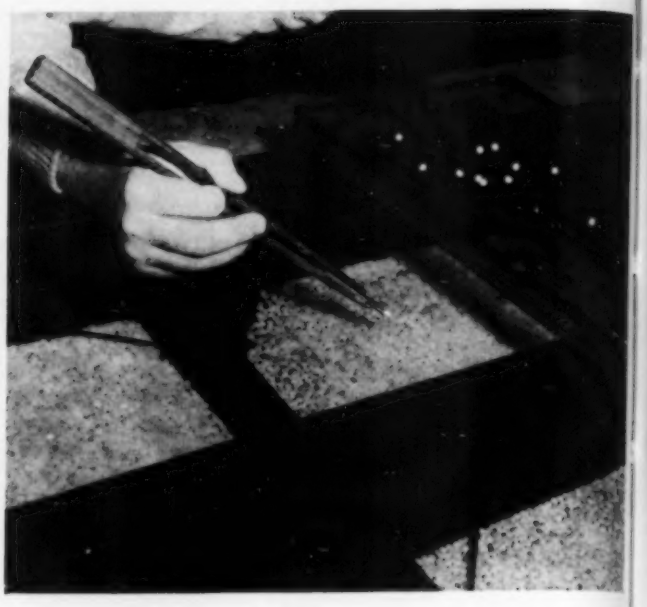
Experimental Stocking

Duffin's Creek, at Pickering, also contained salmon up to the late '70s and fish up to 40 pounds were taken. This stream changed so little in its upper reaches that it was selected (1944-49) for experimental stocking to determine whether certain Ontario waters might not yet prove compatible to the spawning and development of Atlantic salmon. The experiment answered many moot questions. It was learned that these fish grew quickly in warm waters where some became smolts in a year; that growth was retarded in cold, spring-fed ponds and streams; and that few or none survived where silting occurred. Fry plantings were found effective if conducted in favourable habitats, and it was demonstrated that the salmon endured about two years of stream life then moved down to the lake. There was only one authentic record, however, of an adult salmon returning from the lake to Duffin's Creek.

Ouananiche are justly considered among the most renowned of game fish, comparing favourably in everything but size and sea-going habits with their blood cousin, the salmon. Lake St. John in Quebec is their natural home but they have been raised from the egg to the two-year stage in Ontario hatcheries. Introduced into Trout Lake in the Nipissing District they have become well established.

Kamloops trout have also been implanted in certain Ontario waters from breeding stocks developed in a southern provincial hatchery and—unlike its close relative, the steelhead, which, too, has been stocked in some areas—usually prefers to stay in small lakes and not to descend to the sea. Like the rainbow trout, they are great fighters and display a salmon-like frenzy when hooked. The speckled trout, or char, however, is probably the most colourful of all *Salmonidae*. Its beauty, fighting spirit and taste, combined with the entrancing loveliness of its chosen environs attracts anglers from far and wide. "Speckles" are native to cool, spring-fed waters and are most usually found, today, in the somewhat northerly lakes and streams though some of southern Ontario's farming sections know them well.

A licenced fisherman takes a fine big sturgeon on a hook line from the Mattagami River.



Fish Hatcheries and Rearing Stations

Left, above:—A typical trout rearing station at Sault Ste. Marie.

Left:—Inside a hatchery are dozens of irrigated troughs and hundreds of jars through which water flows constantly. They hold the fish eggs until they 'eye-out' at which time some species are planted in natural waters; others are held until the fry hatch out and some until they become fingerlings or even yearlings before they are released.

Left, below:—Hatchery attendants at Normandale carefully remove brown trout from one of the cribs for spawning.

Above:—Removing sterile eggs from a tray of brown trout spawn. The sterile eggs show white against the darker fertile eggs.

Below:—The method of spawning. Thumb and finger are slid along the trout's belly forcing the eggs from the egg sac. This does not harm the fish; many are retained and provide spawn for five years or more before being released in natural waters.

Black bass—often described as "inch for inch and pound for pound the gamest fish that swims"—are extensively distributed throughout Ontario, except for a gap extending through several northern regions from the Quebec border to just west of Fort William. Maskinonge are also widely but irregularly dispersed; they attain considerable size and possess a ferocious vigour that enthralls those who like to win control over such violence with light line and tackle.

By and large, fishing is an absorbing pastime. The small boy with his cork float and alder pole displays as much interest in his string of sunfish and perch as the adult angler with much more elaborate tackle does in his creel of bass and trout. One of the major functions of the Fish and Wildlife Division of the Ontario Department of Lands and Forests, consequently, is to maintain this province's fishing potential, increase its usefulness, and make both the young and old sportsmen happy. To do this will, of course, require the practical application of that most basic of all management principles: to utilize the game fish resource fully yet maintain continuous populations of satisfactory numbers of the species most desired by the anglers.

To place restrictions on the use of game fish cannot alone be expected to guarantee consistently good angling nor can the highly impractical stockings that were carried out indiscriminately for many decades. One may as well plant trees without regard for those growing or for food and space requirements, annual cropping or regeneration. Since no area, whether land or water, can support more than a limited crop, except by artificial fertilization, it is important that such limitations be recognized by management and that it be geared to that level. For this reason, game fish management in Ontario includes the study of fish production in relation to environment and the application of facts found in biological research; to obtain which has been the motive, in fact, for important investigations on preferred species in certain significantly economic waters in Algonquin Park and at South Bay Mouth in Lake Huron. All natural factors—such as productivity, the capacity of certain species to survive in certain waters, and the control of competitive or predatory species—are considered. Contributory studies include pollution, fish diseases, parasites, food preferences and availability.

Fish Culture

An integral part of the general fish management pattern is the artificial propagation of fish and their value in fish culture. In the Department's twenty-nine hatcheries and rearing ponds for game and commercial fish, for instance, trouts are raised to yearling size, maskinonge and bass to underyearling, and whitefish, herring and pike-perch to the fry stage.

The value of hatcheries is unquestionable in certain cases, for example; in stocking suitable waters barren of fish but not of food; waters lacking in natural spawning facilities or adequate natural reproduction; or waters in which the fish have been winter-killed or destroyed by pollution or other agencies. Studies continuously conducted to assess the merit of planting hatchery raised fish in open waters, however, have revealed that the worth of such stockings is limited to particular areas and special uses. It is now recognized, therefore, that certain other fish cultural practices—such as the improvement of game fish populations by removing coarse fish; the transfer of desirable species from overcrowded waters; and the directing of more interest toward fishing for rock-bass, crappies, bluegills, perch, whitefish, catfish and other similar kinds—tend to promote greater and more equable utilization. Other important management measures being pursued include: creation of new or improved supporting waters; reduction in pollution incidence and other environmental reformations; encouragement of better land use; and employment of mechanical devices and fertilization in fish culture.

A final example of fish management concerns the use of rotenone or other toxicants to destroy undesirable fish. Silver Lake—near the Lake Erie town of Port Dover—is a shallow body of water about 1,200 yards long and 150 yards wide formed by a dam across the Lynn River which, investigations had revealed, contained

large numbers of carp, suckers, bullheads, sunfish, minnows of various kinds and even goldfish. "Fish-tox", a commercial chemical, and derris dust (containing 5 per cent rotenone) were used to kill the fish. The lake was then drained, the dead fish removed, and the lake refilled. A month or so later, two million pike-perch (wall-eye) fry were planted in the upper end. Five months later, pike-perch up to ten inches in length were netted by fish management officers conducting sampling operations, which growth rate compares favourably with observations made on pike-perch in Lake Erie. The Silver Lake experiment supports the belief that the planting of fry in an environment treated to reduce coarse fish competition and predation may result in high survival.

However, lake trout will not maintain populations under year round fishing. In fact, since an increasing number of fishermen continue to insist on fishing lake trout winter and summer, so much extra pressure has been placed on this species as to jeopardize stocks in some waters. The limitations of bass and maskinonge culture at the hatcheries require their protection in natural waters in order to meet angling pressure and develop adequate breeding stocks. Also possible, in fact probable, is the premise that parallel problems exist with regard to other species. It appears, therefore, that certain important waters of the province may have to be removed from public use as sanctuaries for game fish development.

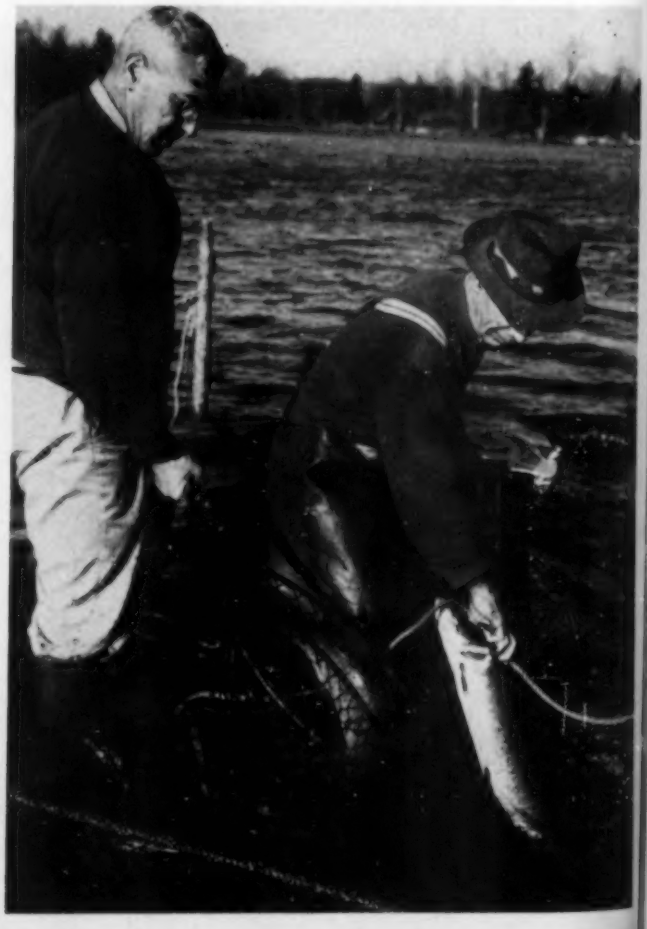
Commercial Fishing

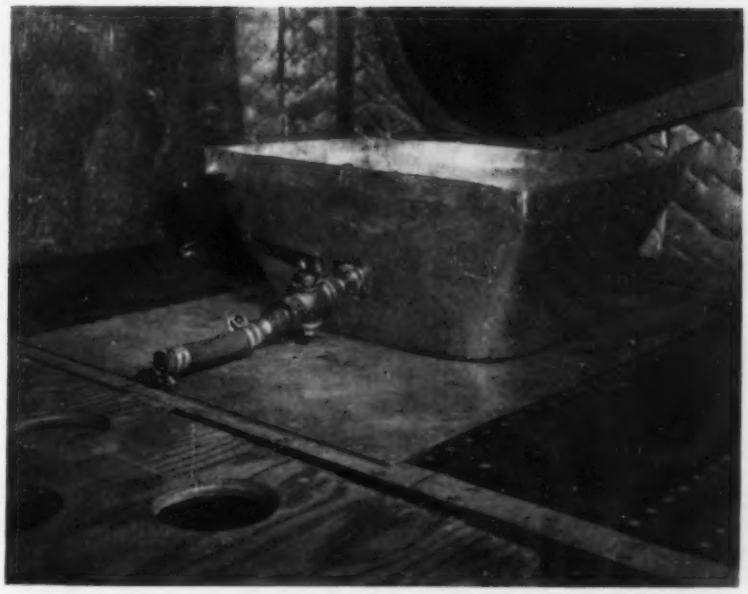
Few Canadians are even vaguely aware that an extensive commercial fisheries industry exists in Ontario, yet it is one of the province's oldest vocations. The terms "fishing" and "fisherman" bring to most minds only a vision of some individual enjoying his favourite sport; the picture seldom includes the $7,000,000 province-wide enterprise that provides direct employment for more than 4,000 persons plus other work, indirectly, for many more.

Commercial fisheries harvest raw materials approximating 25 to 35 million pounds annually of Ontario's natural fish resources. Most of the species taken are either unwanted by anglers or cannot be taken on sportsmen's tackle; but three species—pike, yellow pickerel (wall-eyes) and lake trout—provide sport for anglers as

It is not easy to tame and hold a huge maskinonge for spawning, but these Lakefield rearing pond attendants know how to get results.

When lakes or streams are known to be overcrowded, fish management officers net out a proportion and transfer them to other waters.





Staff at North Bay display an assembly that fits into the floor of a Beaver aeroplane for restocking waters.

Right, above:—The basin is filled with water and the fingerling size fish are transferred from a tank in the plane to the basket, the high sides of which prevent the fish jumping out.

When the trap-doors in the bottom of the basket and basin are opened the fish are spewed out of the bottom of the plane through this pipe, the slip-stream scattering the fingerlings. A very high survival ratio is obtained by this planting method.

well as 25 per cent of the total commercial catch. With regard to these three fishes, it is evident that the fishing industry is utilizing a crop that would otherwise be insufficiently used and even, in some waters, wasted.

Commercial fishermen in Ontario employ 4½ to 6½ inch mesh gill nets to take whitefish, pike, yellow pickerel and lake trout, and for blue pickerel, perch, herring, tullibee, chub and other fish of similar size, 2½ to 3 inch mesh nets. Extra large meshes of 8 inches or more may be employed to take carp, and in certain waters, 12 inch meshes for sturgeon.

Another net type used for taking commercial fishes is the pound net which, as its name implies, is an impounding device, not a snare. The fish are guided into a rectangular crib from which they may not escape yet may swim freely within it. Since the top of this net is open, the upper parts of the netting must be held above water by stakes. Trap nets, similar in shape to pound nets, are also used in some waters. Their cribs are closed top and bottom except that the top may be lifted like a trap-door to extract the fish. Thus, unlike the pound net, a trap net can be set at almost any depth, over most types of bottom, moved about freely and, being submerged, is not subject to ice or storm damage—which permits it to be set earlier in the spring than most impounding devices.

Also used, principally for taking coarse fish in shallow waters in the St. Lawrence River, Bay of Quinte and Lake of the Woods, is the

fyke or hoop net; seines are worked chiefly for fishing suckers and carp; and several forms of dip nets are used to take up coarse fish and minnows. Night or hook lines are set by some fishermen for lake trout in Georgian Bay and Lake Huron, catfish and bullheads in the Bay of Quinte, and sturgeon in Lake St. Clair and certain inland waters in Northwestern Ontario. Carp, sheepshead, ling and other coarse species are also taken on these rigs which consist of long lines to which leaders terminating in baited hooks are attached.

All nets or other gear operated in provincial waters are licenced, of course, by the Ontario Government under the Special Fishery Regulations which are generally both restrictive and protective. The future of fishing is protected by imposing closed seasons during spawning periods and for the space of time necessary to increase depleted species; certain waters may be entirely closed to commercial or other fishing; and the taking of fish below a certain size or beyond certain quantities may be forbidden. Undesirable types of fishing gear are prohibited under the regulations and the use of other apparatus restricted. Each licencee must state in his application, and the Government must approve, the kind of net and size of mesh to be used and the location of his operations.

The present day commercial fisherman is essentially modern and adopts a scientific approach to his work. The gasoline and diesel craft of today commonly bring the fish to shore in prime condition and much of the catch is sold fresh. Many of the newer boats fishing the Great Lakes are 50 to 60 feet long and have machinery for handling the nets. Many are equipped with two-way radio; some have echo-sounding devices; a few even have radar. The fishermen are replacing the cotton and linen nets of yesteryear with nets made of nylon twine which does not deteriorate or mildew on frequent contact with water. Many, individually or collectively, own and operate quick-freeze units and ice-making machines.

Even in the more remote northern areas, from which the fish must be transported 200 miles or more to the nearest railway, the fishermen are adopting modern methods and acquiring modern equipment. Instead of canoes, dog-teams and horses (depending on the season), outboards, motor-toboggans and snowmobiles are coming into use. The tractor-trains and barges that once ponderously moved the catches to the nearest railhead are being displaced by aircraft which fly the fish quickly and directly to market without loss of quality—without waste; which is good conservation, an essential part of good management.

Commercial fishermen in Ontario, along with others concerned with the industry, realize that it is good business to work together and exchange ideas. Many have combined to form local associations and hold meetings at which particular problems are discussed. Most local organizations, in turn, are members of the Ontario Council of Commercial Fisheries which convenes annually to discuss problems facing the industry and consider and frame recommendations regarding regulations.

In Ontario, it is the responsibility of the Department of Lands and Forests to administer the fisheries resources and to see that the regulations are enforced. But every Ontario fisherman shares with the Department the responsibility for maintaining both commercial fishing and angling at the highest level possible based on the premise that the optimum position can only be achieved by removing the maximum crop available each year to make way for new growth yet retaining sufficient stocks to perpetuate good populations.

Manitoulin Island fishermen use a form of dip net to lift fish from open top crib of pound net.

Game Birds and Animals

Like other living resources, the wildlife resource is a product of the land and its management—a basic form of land use. In some sections, where the local economy still remains as it was throughout the province before settlement, it is the only land use; in many areas it runs second only to forestry; and in others it follows agriculture and forestry —all because the characteristics of wildlife species vary in wilderness, commercial forest, and farm areas. The production of farm game, for example, is compatible only with agriculture; is almost entirely dependent on agricultural environment; and the species concerned cannot exist in other than agricultural areas. Pheasants, Hungarian partridge and European hare, for instance, are no more native to Ontario's forests than the crops on which they thrive.

In the realm of the wildlife resource it is the avowed aim of the administrators to ensure a sustained yield of game birds and game and fur-bearing animals at a level proportionate to the carrying capacities of their respective ranges. The province is presently engaged in converting its administrative program from one in which law enforcement predominated to a system of game management combining biological fact finding and public education and enforcement, relying on enforcement only where education has not created conservation consciousness in those using the wildlife resource.

In earlier years it was considered that whitetailed deer, moose and woodland caribou could be kept at satisfactory population levels by partly or entirely closed seasons, but this theory did not work out in practice. There has not been an open season on woodland caribou since 1929, yet the herds have increased at much less than the hoped for rate. Partly this was due to ineffectual enforcement, but mostly to the destruction of preferred habitat by logging, forest fires, and the unwelcome (to caribou) advent of man.

Game Preserves

When it was noted, about three decades ago, that law enforcement was unable to compete

New types of modern watercraft used in commercial fishing at Port Dover on Lake Erie, home port of one of the world's largest freshwater fishing fleets.

with poaching pressure, it was decided to establish Crown Game Preserves in which wildlife might receive special protection and supervision. In these areas increases have indeed resulted. In a few years, deer—and to a lesser extent moose—increased to over-population levels and literally "ate themselves out of house and home"; a most unsatisfactory trick from a management viewpoint, especially one aimed at maintaining hoofed game animal populations on a perpetual basis that would not at the same time prove detrimental to woodlands and their regeneration.

It is now known that local populations of deer and moose could be taken care of by opening many of the now closed areas and harvesting the surplus animals. This could prevent waste. Proper range management is the next phase; but before this can be undertaken with any degree of success a more intimate knowledge of population levels, range conditions, food supplies—and their relationship—is required. Inventories to ascertain such information have been made and are being studied.

It has been found that in Northern Ontario, where they are comparatively recent arrivals, the deer are still extending their range, but that in the more settled parts of the province they are rare and, in some areas, extinct. Their populations, taken collectively, are sufficiently

Above:—Passenger pigeons displayed at the Royal Ontario Museum. The last bird of this once-plentiful species died in the Cincinnati Zoo in 1914.

Left, above:—Canada geese resting at the Pembroke fish rearing station on their autumn migration southwards. International agreement and wise management have restored duck and geese populations from very low to good levels.

Left:—This woodcock retains confidence in its protective colouring despite the cameraman. Surplus stocks are harvested annually.

Left, below:—A department biologist examines pheasants taken by a Pelee Island hunter to check numbers taken, age, and sex.

Below:—Two male pinnated grouse contest the right to 'booming grounds'.

high, however, to warrant open seasons each year. Generally, the deer situation is satisfactory.

The moose, too, have extended their range during the past fifty years and increased satisfactorily. Although excessive hunting influenced a closed season from 1948 through 1951, a resident season became feasible in 1952 and a "split season"—to provide satisfactory sport not only for resident and non-resident hunters but for trappers and other northern inhabitants—was declared in 1953. The caribou situation still remains unsatisfactory in spite of faint signs of increase. The black bear needs no special consideration. For the future, the greatest importance must be attached to the fact that sound timber management may contribute to good game management. Certain changes in timber management plans now being studied may prove beneficial.

Fur-Bearers and Trapping

A variety of fur-bearing animals inhabits almost all parts of Ontario. In the northern and northwestern regions they provide a livelihood for most Indians and for many white trappers. Consistently, the key animal of the trapping industry is the beaver; perhaps because its numbers may be readily assessed; its harvesting controlled; and, generally, its fur brings good prices.

A young moose calf will freeze at sign of danger. Wise management requires an annual harvest of deer and moose which increase beyond food supply limits.

Right, below:—Wildlife management acknowledges the importance of the existence of all forms of life, even of the waddling old porcupine, which sometimes damages trees.

The fawn's spotted coat and instinct for remaining motionless often save him from detection and sudden death.

Fisher up a tree at Wanapitei River. Fisher are valuable furbearers and, with beaver and marten, are carefully managed to ensure their perpetuation.

The beaver stock across the province has been built up so well under the Department's fur management plan that a harvest of 130,000 pelts has been retrieved in a single year without jeopardizing future populations. Occasionally, in fact, beaver have become a nuisance in some settled areas—as when their dams flood railways, roads and private property—and must be live-trapped and released in less populous environs. Marten, too, are taken alive in some of our well-stocked Game Preserves, not because they assume nuisance proportions, but to be moved to short supply areas which formerly supported these valuable fur-bearers in relatively large numbers.

The Department's fur management policy in recent years has become one of education. The trappers are being instructed in wise management practices, and their responsibility towards the general management scheme is explained. There is indisputable evidence that this procedure is already returning dividends not only to the trappers but to the province generally. Fur production has increased, providing greater revenues from sales for the trappers and increased royalties for the Department on behalf of the public at large.

Furthermore, there has been a gratifying improvement in the attitude of the average trapper towards the Department and its field officers, and in the support accorded fur management. Almost all Ontario trappers now co-operate in providing accurate information as to fur-bearer populations; the sex ratios of animals trapped; and other factors contributing to effective management planning. Improved methods of recording this information are being developed by the Department for management reference.

Today, almost all Crown Lands in the province are sub-divided into registered trapline zones and licenced to individual trappers or, in the north, to Indian bands. Each registered trapline licence conveys to the holder the exclusive right to trap in the zone defined. Trappers, therefore, have become interested in rebuilding stocks of important fur-bearers in areas previously depleted by over-trapping, forest fires or range deterioration brought about by unwise logging. Since the trapline licencees also become responsible for the protection of their respective areas they are ever alert to prevent trespass. To help ensure the future of beaver, marten and fisher, the Department has set trapping quotas based on the actual number of animals inhabiting a given area. All pelts must be sealed by a Department officer before being offered for sale. This not only discourages poaching but provides wildlife management with a harvest tally and a knowledge of the movement of furs within the province.

The formation of Trappers Councils throughout Ontario, each representing from 25 to 35 neighbouring trappers, has received Departmental encouragement. Committees of five are elected by each council group to discuss and make suggestions and recommendations to the Department in respect of quotas, seasons, predator control and other trapping matters. The recommendations of Trappers Councils have influenced several constructive changes

in trapping regulations during the past several years. Council meetings are often attended by Department officers who explain new legislation and arbitrate disputes between trappers where the Council has been unable to effect agreement.

Altogether, because trapping regulations are more in equity, and because the Department emphasizes wise management over enforcement, Ontario trappers have been operating under greatly improved circumstances during the past four years. They recognize, from recent experience, that registered traplines, properly managed, provide more fur more consistently.

Cycles of Abundance

The most striking—most baffling to management—characteristic of fur-bearing animals, however, is their susceptibility to inexplicable cycles of abundances and scarcities which occur at remarkably regular intervals, and may affect trappers' returns from time to time. Little is presently known about these fluctuations other than that they seem to coincide with variations in prevalence of rabbits, field mice and other small animals on which certain fur-bearers feed.

Similar cycles plague some upland game bird species. For a few years out of each ten, in Ontario, ruffed grouse furnish unparalleled sport, but the intervals of scarcity apparently have little or no relationship to hunting pressure. To bolster pheasant populations, however, some 50,000 birds must be reared annually on provincial game farms for release in strategic areas. A study of pheasant populations reveals that they thrive only in regions experiencing less than fifty inches of snowfall. Releases, therefore, are confined largely to Ontario's more moderate climes of which Pelee Island is "farthest south" and, reputedly is "the finest pheasant shooting country in the world". In verification, Department records reveal that, in the 1950 shoot, a total of 25,000 pheasants were taken from this 100,000 acre island. The justly famed Pelee shoot is, however, carefully organized, controlled and managed; rigid quotas ensure that sufficient birds are left as a breeding nucleus; the area, therefore, needs no bolstering from game bird farms but depends solely on the capacity of the purposely left-over birds to reproduce. The residents of the island are ever alert to discourage poachers, and there are no other predators.

Predatory animals have been a thorn in the flesh of Ontario's wildlife populations from earliest times. Since man entered the scene many weird and wonderful schemes for reducing their numbers have been suggested and some have been tried. The predators are still around. Substantial bounties have for long been paid on some. In the year ending March 31st, 1952, for instance, 1,198 timber wolves, 634 brush wolves and 63 pups—a total of 1,895—were killed. Bounty money paid on these amounted to $41,808 and, in addition, $4,180 was paid out by the Department on 408 adult and 29 cub bears. However, though the payment of bounties may have encouraged some predator killing, it has been demonstrated that such payments stimulate wolf killing in very limited areas. Attention is being given lately to organized wolf hunts with dogs.

Protective Legislation

It was recognized early in Ontario's history that public assets of such vital importance as fish and wildlife resources require effective protection and management. Some nick-of-time legislation to protect fish and wildlife was passed in 1821. Although the people of that day may not always have understood what lay behind the laws they made, they tried to do well. They had, however, to learn the hard way —by experience—and to amend the laws from time to time as occasion demanded. In 1890,

Beaver are the most important animals in Ontario's fur industry. This kit at Little Doe Lake may one day become part of a coat.

a Royal Commission was appointed to study the wildlife situation. It was none too soon. For some species, in fact, it was too late. Atlantic salmon, the passenger pigeon, the wild turkey, and several other forms of pioneer day wildlife were already on their way out, could not recover even under complete protection, and passed from the scene. The commission's report, submitted to the Ontario Legislature in 1892, undoubtedly stimulated the adoption of some regulations that probably saved a number of vanishing wildlife forms. Many of our present day administrative laws are based on its recommendations.

Ontario now has a staff of trained biologists, conservation officers and others to help formulate a program of sound fish and wildlife management. Certain conservation officers and others of the field staff are selected each year by the Department for special instruction at the Ontario Forest Ranger School. Progress based on knowledge—to a degree once considered impossible—is being made.

Now, from offices at the Parliament Buildings at Toronto, an administrative Division of Fish and Wildlife operates in four sections: commercial fish, game fish and hatcheries, wildlife management, and enforcement. Field work is decentralized through the twenty-two forest districts in the province each of which contains all essential services. Personnel engaged directly in fish and wildlife management in Ontario total 374 of which 200 are conservation officers, 21 are wildlife management officers, 28 are biologists, and 80 are hatchery attendants. Biologists and technicians of the Division of Research also conduct fish and wildlife research and investigations both in the field and at the Southern Research Station at Maple.

A Sudbury conservation officer packing guns confiscated from hunters who have violated hunting regulations. In time they will be auctioned.

A legislative committee meets annually in Toronto to review suggestions and recommendations made not only by fish and wildlife management based on reasonably certain knowledge but by many interested fishing, hunting, trapping and other citizens' organizations as well. The resulting legislation and regulations providing for the protection, conservation and management of Ontario's fish and wildlife resources on a sustained yield basis are contained in the Game and Fisheries Act, the Wolf and Bear Bounty Act, the Migratory Birds Convention Act (Canada), and the Special Fisheries Regulations of the Canada Fisheries Act (which are recommended by the provinces). The provisions of these Acts are considered by most to be fair and just. At the same time, they provide for more effective law enforcement than in former years. Fines are stiff enough to make poachers think twice before taking game in an illegal manner.

Enforcement

The protection and conservation of fish and wildlife should not, of course, require enforcement; but such, unfortunately, is still the case. The enforcement of Ontario's Fish and Game Laws and Regulations is the chief responsibility of the 200 Conservation Officers who patrol their territories by car where there are roads, and by aircraft, or canoes or other transportation elsewhere. All are seriously engaged in providing an adequate system of protection over the province's fishing waters and the wildlife inhabiting the land.

Many of the officers have served more than fifteen years, and are thoroughly acquainted with all regulations. They are qualified to interpret the intent of any provision of the various Acts or to assist in the instruction and guidance of newly appointed men. Ontario's Provincial Police Officers, Provincial Park

In summer thousands of people leave the cities to seek relaxation in the lakeland areas of Ontario. Some build small cabins and some stay in such places as this lodge at Killarney Lake.

Rangers and Fire Wardens, as well as 1,400 Deputy Game Wardens, also co-operate closely. Deputy Game Wardens are appointed annually by the Minister of Lands and Forests. Their principal functions are: to warn "innocent" offenders; advise them how to avoid repeating the offences which their ignorance of the laws permitted; and to accompany the permanent officers from time to time and assist them where necessary.

The Conservation Officer's work is of the greatest value but he must be a "diplomat extraordinary" to deal with the many varied problems encountered. There are still the intolerants who contend that the various Fish and Game Acts provide unwarranted restrictions and thus attempt to justify their infractions. The Conservation Officers really dislike seizing equipment from and prosecuting these people, but they realize that the protection of Ontario's fish and wildlife resources, unfortunately, still requires stern, impartial punitive measures.

Conservation Officers are not concerned wholly with enforcement, however. They are the eyes, ears and hands of the Department of Lands and Forests in much of its fish and wildlife management work. Each year they come in contact with some 600,000 sportsmen, trappers, commercial fishermen and other citizens. They are very happy that, of this impressive army of anglers, hunters and others who participate in the privileges accorded by Ontario's fish and wildlife resources, only about one-half of one per cent merit apprehension. The rest they class as Good Sportsmen!

The central figure in this intricate pattern is the Norwegian Saint Hallvard. The hanging was designed by Else Poulsson.

The New-Old Handicrafts of Norway

by ADELAIDE LEITCH

Photographs courtesy Den Norske Husflidsforening.

THE ANCIENT VIKINGS, those adventurers with the souls of artists, laid the groundwork for the *Husflid*, the twentieth century handicrafts of Norway that today involve an estimated half of the population.

The magnificently carved prows of the early Viking galleys still represent some of the finest carving in the whole history of Scandinavian art. The arms and household utensils, with the careful and beautiful carvings of their eighth-century makers, are still models of art, but the modern home workers are adapting old forms to modern usage, and there have been many changes since the early Norsemen roamed the seas.

Unlike other countries where popular demand and, particularly, the foreign visitor's demand has been the yardstick of production, the Norwegian *Husflid* today, as through its entire history, is far less concerned with what the foreigner wants than with what the Norwegian family needs for everyday use. It is a practical culture that turns out a butter mould as expertly made as the monumental tapestry that hangs in Oslo's new City Hall.

If the souvenir-hunting North American looks in some disfavour at the unadorned soup ladles in *Den Norske Husflidsforening* in Oslo, he must remember that the *Husflid* does not care if he likes them or not. If he prefers the gaudy glazed ash tray in a corner shop, then the handicraft people of Norway do not think much of his taste.

The soup spoon, as well as the simple bowl, the furniture and tapestries that are the modified versions of old models, have the stamp of approval of the people who will use them — the Norwegian families themselves. When it could not educate the public away from strictly useless "souvenirs", the *Husflid* did start making a few of the more typical "tourist goods" — the little Norwegian dolls, the replicas of Viking ships, the ancient, diminutive ornaments serving as book marks or conversation pieces, all finished with infinite care. This "putterwork," as it was originally dubbed in derision, has now reached a standard which, if it does not always please the prospective purchaser who wants Lief the Lucky on an ash tray, is at least the most workmanlike "putterwork" in Europe!

From its earliest, Viking origins, *Husflid* developed slowly in Norway, through the era of decorative textiles of the Middle Ages,

This is a modern Norwegian design by Else Poulsson, foremost of the Husflid artists.

These are reproductions of the old type Norwegian baskets and boxes, and are made from birch bark.

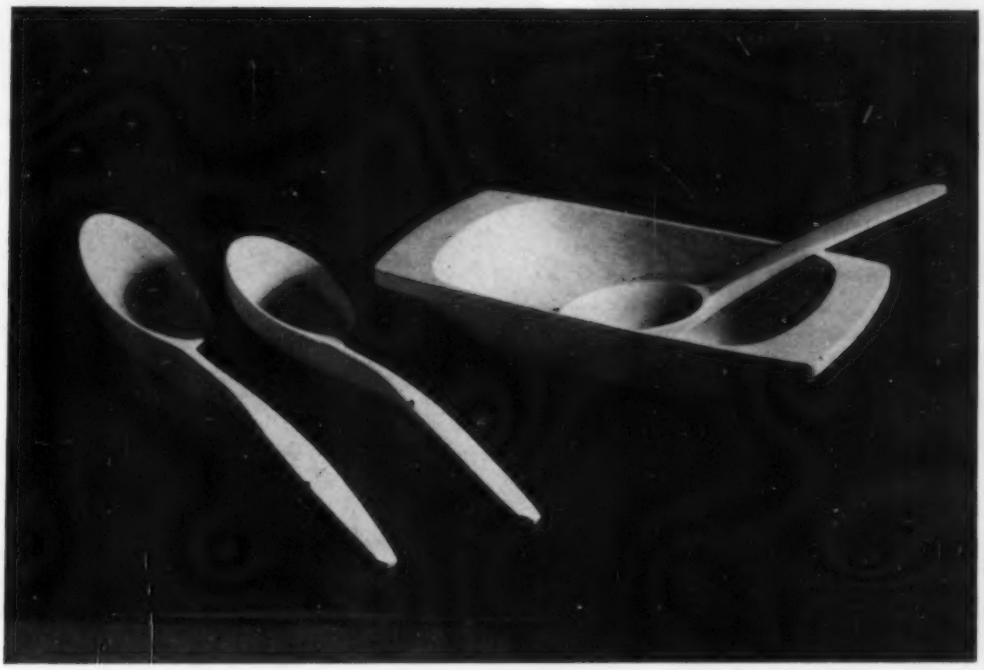
the rise in silversmithing, and finally the drastic decline in the nineteenth century with the infiltration of foreign, European influences and cheaper, machine-made goods. The people readily turned from their own Norwegian culture, and "hand-mades" began to have a slight stigma.

The come-back was hard and slow. The present-day Home Industries had their actual start between 1880 and 1890 when upper class Norwegians suddenly awoke to the fact that their own Norwegian crafts and cultures were being lost in a welter of international designs. Leaders in the Norse museums joined in a talk-and-paper battle; articles began to appear in newspapers, speeches were made, and hostesses deliberately brought up the subject over tea tables. Gradually, the public was aroused and, after the slow-down during World War I, it surged ahead through the 1920s and emerged again as an all-Norwegian culture. There was a subtle difference, however, for this was a *Husflid* that preserved the traditional while adapting it to modern living.

Gradually, all over the country, Home Industry societies sprang up. Then came small shops to channel the output of the workers, the housewives, farmers and machinists with a few spare hours, and the clerks with hobbies. The Oslo shop — *Den Norske Husflidsforening* — was the first and is still the largest. While the Oslo society is officially the national one, it has no share in governing the others. Each is independent, but all work co-operatively towards the same goal.

While the Norwegian is human enough to appreciate the extra kroner jingling in his pocket, Norwegian handcrafts sternly play down the monetary gain as much as possible, and put the emphasis primarily on design and workmanship, the preservation of old styles in modern guise. By 1938, there were twenty societies engaged in this work from Bergen in the fiords to Bodo in the Arctic.

Both men and women are handicraft workers. The tub was made by the man. His sister busies herself with spinning and knitting.



Household utensils of pleasing lines are turned out by the Norwegian Husflid for use in present day homes.

The teachers of *Husflid* are, to a large extent, the parents who have handed down traditional skills from generation to generation. Trained field workers occasionally pay a call, and the societies frequently issue sheets of designs for everything from axes to looms. Eager foreign publishers at one time began issuing supposedly "authentic Norwegian patterns" and, when these found their way back to Norway, they almost undid the careful work of the *Husflid* before they could be stopped. More trouble came when original patterns were copied in inferior machine-made goods that drastically undersold the hand-made articles.

Tastes and styles vary from area to area — from the "big city" flavour of work in the Oslo shop to the scarlet hats and fur belts of a tiny *Husflid* shop in Lapland. They produce everything from a wooden spoon to a magnificent copy of a Gobelin tapestry. Many public buildings, as well as Oslo's town hall, have pieces of *Husflid* work.

The Norwegian government contributes only about 5,000 kroner a year to this work, but expenses are twenty times that and the societies are overjoyed if they break even at the end of a year. A profit on the books usually means there will be a new text issued.

Producers of *Husflid* are of all types — the housewife who can spend only a few minutes while the kettle boils, the farmer who satisfies his artistic yearnings with a bit of woodwork when the chores are done, the mechanic who turns out pieces of handicraft after his regular work. The societies are strict in their definition of *Husflid* — all workers must be producing spare-time within the bounds of their daily household life. Some do "graduate" and start full-time businesses of their own but they cease to belong to the Home Industries, which are exactly what they claim to be — a Norwegian culture developed within the home.

A home industry producer spares a few minutes from her housework to weave some more rows on her curtain material.

Canada's Export Flour Trade

A Trail-Blazer of Canadian Commerce

by OLIVER MASTER

WHEN we speak of 'world' or 'international' commerce, we are speaking of trade which takes in a lot of territory. Canada's official trade records, showing where our exports go and where our imports come from, cover a long list of countries. All told, there are considerably more than a hundred. Many of them are colonies or dependencies, and it may be stretching the meaning of the word even to list them as separate 'countries'. They are described in that way, however, in our trade returns because each of them has its own local government and its own customs administration. Thus, the different parts of British West Africa, such as Nigeria, Sierra Leone and the Gold Coast, appear as separate units. So do the various colonies in the British West Indies, and the different colonial areas administered by France, Portugal and other countries. The purpose of our trade statistics is to give as good a breakdown as possible of our foreign trade. When we study them in detail we find that we are doing business with a much larger number of countries than most of us have previously realized.

Of the hundreds of commodities which Canada sells abroad, many go to only three or four countries, others to perhaps fifteen or twenty. But some of our most important export products go to as many as fifty or sixty destinations, or even more. These are the commodities that have been the great trail-blazers of Canada's overseas trade.

Wheat and flour are two of the products which for many years have played a leading part in making the name of Canada well known commercially in every quarter of the globe. There are not many commodities entering into world trade from any one country that are more widely distributed than Canadian wheat and flour.

In 1952, Canada exported wheat to the value of $621,000,000, and wheat flour to the value of $116,000,000. While our wheat exports were more than five times as great in dollar value as our flour exports, flour found its way into much the greater number of separate countries or markets. Wheat went to fifty-one countries as compared with the seventy-four to which shipments of Canadian flour were consigned.

Incidentally, there were many countries that purchased both wheat and flour, a smaller group that bought wheat only, and, again, many others where we were able to sell some flour but no wheat. Perhaps the chief reason why the flour trade is more widely diffused is the fact that in many countries, where little or no wheat can be grown, there is no domestic milling industry. Countries which are able to grow wheat, but not enough to meet their entire needs, are likely to import both wheat and flour. In still another category are those countries where, with a domestic flour milling industry strongly established, imports are confined to wheat alone.

What about the geography of this world-wide trade in flour? Where are all these countries—seventy-four of them—to which Canadian flour was exported in 1952? Obviously, they must cover quite a large part of the world's land surface.

Much the largest buyer was the United Kingdom. We have no other flour customer which qualifies as even a close runner-up. The Philippines and Egypt, the next largest buyers in 1952, both bought well over a million barrels, but their combined purchases were little more than half of those of the British. The other major buyers were very widespread —Venezuela, Italy, Lebanon, Hong Kong, Ceylon, Cuba, Indonesia, Haiti, Costa Rica, Israel and Japan and Ecuador. Both individually and as a group, the British Caribbean countries, including Trinidad and Tobago, Jamaica, the Leeward and Windward Islands, Barbados and British Guiana, are extremely important flour markets.

However, these larger buyers—the million-dollar and the multi-million-dollar customers—account for only about a quarter of the long list of markets to which Canadian flour is shipped. The full list reads almost like a roll-call of the United Nations, and of their dependencies as well. The consumers of Canadian flour embrace the peoples of a dozen countries in Europe, another dozen in Africa, half a dozen in South America, twenty or more in the Central American and Caribbean areas, fifteen or so in the Near, Middle and Far East, and six or eight others which, geographically, are more or less off by themselves, such as Alaska, Iceland, and Bermuda.

Obviously, the export managers of Canadian flour mills must be a group of men with an exceptional grasp of the commercial geography of the world. They must know where, in every continent, potential markets for imported flour may be found. They must be familiar with the tariffs, import controls, and currencies of the different countries, and with their merchandising methods. The details of shipping routes and schedules must be part of their daily diet. These export managers are the men who, joining hands with the banker, the rail and ocean shipping experts, and the import merchant abroad, perform the key service in pioneering and maintaining a trade which takes one of Canada's top products into the homes of millions of consumers in scores of overseas lands.

Strangely enough, the 'barrels' of flour that are listed in our trade returns as going to so many destinations are largely non-existent. The barrel, once the standard container of the flour trade, is no longer in use except to a very limited extent. The strongly made export sack has taken its place. The dock workers who unload Canadian flour in Singapore, Hong Kong, Naples, or Liverpool, are far more familiar with the ears of a flour sack than with the brand label on a barrelhead.

Wheat, Canada's most important agricultural product, ranks first among her 1952 exports, which were valued at $621 million. Shipments of wheat flour were valued at $116 million. N.F.B.

On market day farmers bring produce from the surrounding countryside to the city in trucks, and customers arrive in the family car to lay in supplies.
N.F.B.

Endless streams of traffic are an integral part of modern city life. N.F.B.

A transportation commission maintains radio-equipped cars which may be quickly directed to any troublesome spot.
Capital Press Service

Canada on Wheels

by KENNETH MacGILLIVRAY

THE history of man has been one long series of adjustments to changing customs, changing habits and changing environment—factors which we have come loosely to lump into the euphemistic term "way-of-life".

Growing knowledge and understanding of the world around him has enabled man to surround himself with materials, devices, methods and skills which step by step have brought him from the primitive to the modern—from the fur-draped cave-man of the comic cartoonist to the equally comic luxury-loving inhabitant of today's world who seems determined to reduce life to a super-simple formula in which neither discomfort, inconvenience nor undue physical effort have any place whatsoever.

Adjustments to these changes as they come to pass—and hypothetical readjustments if the process were to be reversed—might be classified as individual and social. While one man might readily, if regretfully, adjust himself to the loss of many of the comforts and conveniences of our twentieth century way-of-life, the social economic equilibrium would be affected quite drastically by the mass withdrawal of those same factors.

Nevertheless, modern society being the flexible and adaptable entity that it is, there is no doubt that it would, with inconvenience, survive the sudden removal of such prized and universal possessions as television, the oil furnace, and the water faucet — all devices which we regard as setting us apart from primitive or less advanced peoples not in the forefront of an industrial economy.

Most people would agree that the forced return of the gramophone, the wood stove and the old oaken bucket—temporarily painful though the transition might be to many—would in the end have no permanently ruinous effect on our way-of-life, provided, economically, the switch-over in mass production from one group of items to the other could be achieved fairly quickly and expeditiously by super-efficient modern industry. In other words, both the individual and the social readjustment could be made without more than a superficial and passing, though deeply painful, disturbance.

There is, however, one modern invention—also classified by some as a non-essential—to whose loss our present-day society could not adjust itself by a mere regretful shrug of its collective shoulders.

That invention is the motor vehicle—one of man's so-called conveniences which has become so much a part of his very life in an industrial society that it could not be removed without immediate, permanent, calamitous and irremediable damage to every phase of our modern society.

It is true that, in the early years of the century, the automobile was admittedly the toy of the play-boy and the hobby of the eccentric. It possessed neither reliability, sturdiness nor adaptability to any purpose except a form of transportation which exceeded the speed of the horse for short distances between punctures. The cost then of maintaining a motor car was out of all proportion to its usefulness—and in addition its advent constituted a problem to the horse and buggy and compelled expenditures on the horse-and-buggy roads of the era.

It is therefore not surprising that, until around the time of World War I, the motor car and such few commercial motor vehicles as were beginning to appear on the streets were termed non-essentials which the individual and the community might very well be without. That this opinion should persist almost forty years later in a fully motorized society in which mechanization is the very life-blood of our economy is a phenomenon of our time.

Today, in the Canadian way-of-life, the motor car and the motor truck are interlaced. This fact is established beyond contradiction by current statistics applying to the usage of motor cars in Canada.*

* Canadian Automobile Chamber of Commerce Incorporated motor vehicle usage survey by Canadian Facts Limited, 1952.

Photographs in this article from the following: Capital Press Service; Chrysler Corporation of Canada, Limited; Canadian National Railways; Ford Motor Company of Canada, Limited; General Motors of Canada; International Harvester Company of Canada Limited; Nash Motors of Canada, Limited; National Film Board; Ontario Department of Highways; The Studebaker Corporation of Canada, Limited.

A fleet of trucks provide essential distribution facilities at a railway freight terminal in Montreal.

For example, the average motorist in the Dominion devotes 91 per cent of his driving time and his gasoline to non-pleasure in one form or another. Only 9 per cent could be classified as pleasure driving. *So essential has the family automobile become that proponents claim that many aspects of domestic and community life would be completely paralyzed without automotive transportation.*

Perhaps the most striking figure available from a recent survey shows that approximately 2,000,000 Canadians—equivalent to nearly half of all employed persons—use a motor vehicle in one way or another. So dependent have Canadians become upon automotive travel, even in going to and from work, that other and older means of transportation would be incapable of taking up the slack immediately in the theoretical event that the use of automobiles was interrupted.

When it comes to transportation for essential purposes, more Canadians use automobiles than all other forms of transportation combined.

At the present time in Canada there is a motor vehicle in operation for every 4.6 persons, and a privately-owned motor car for every 6.3 persons. Canada's motor population stands at approximately 3.15 million vehicles, of which 1.9 million are privately owned. The pace of life throughout Canada today is so closely geared to the automobile that its reduction down to the tempo of the horse, the trolley-car and the bicycle is unthinkable.

An example is readily found in the expansion of present-day North American cities. The modern trend is toward decentralization of dwelling areas—a great ring of semi-rural suburbs surrounding the original municipality. Each subdivision (a term virtually unknown three decades ago) has its own essential services, but the overwhelming majority of its families depend on the motor vehicle to transport the bread-winner anywhere from five to thirty miles to his place of employment in the core of the circle.

Along with the suburban use of land has come another new development which could not arrive or survive without the family automobile. It is the shopping centre—the tightly-bunched group of retail enterprises which, surrounded by lavish parking-space, offer the

Drive-in theatres, where patrons watch the screen from their cars, are an established part of Canada's summer recreation. Living on wheels has so firm a hold that on Sundays some of these theatres are used to hold religious services. Inset shows the collection being taken at such a service.

Capital Press Service

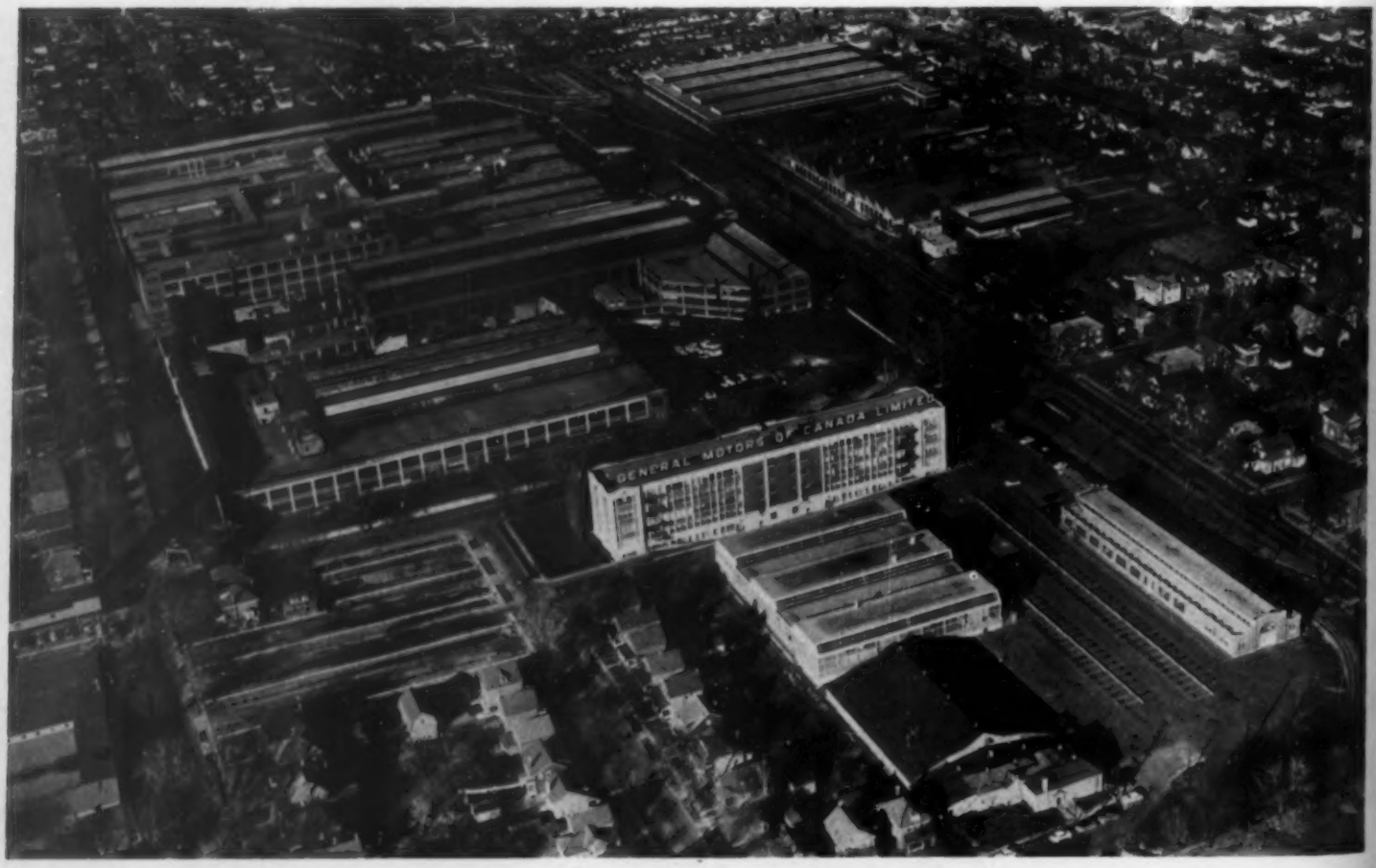
Factories, such as this aircraft plant, must provide extensive parking lots for the many employees who drive to work. N.F.B.

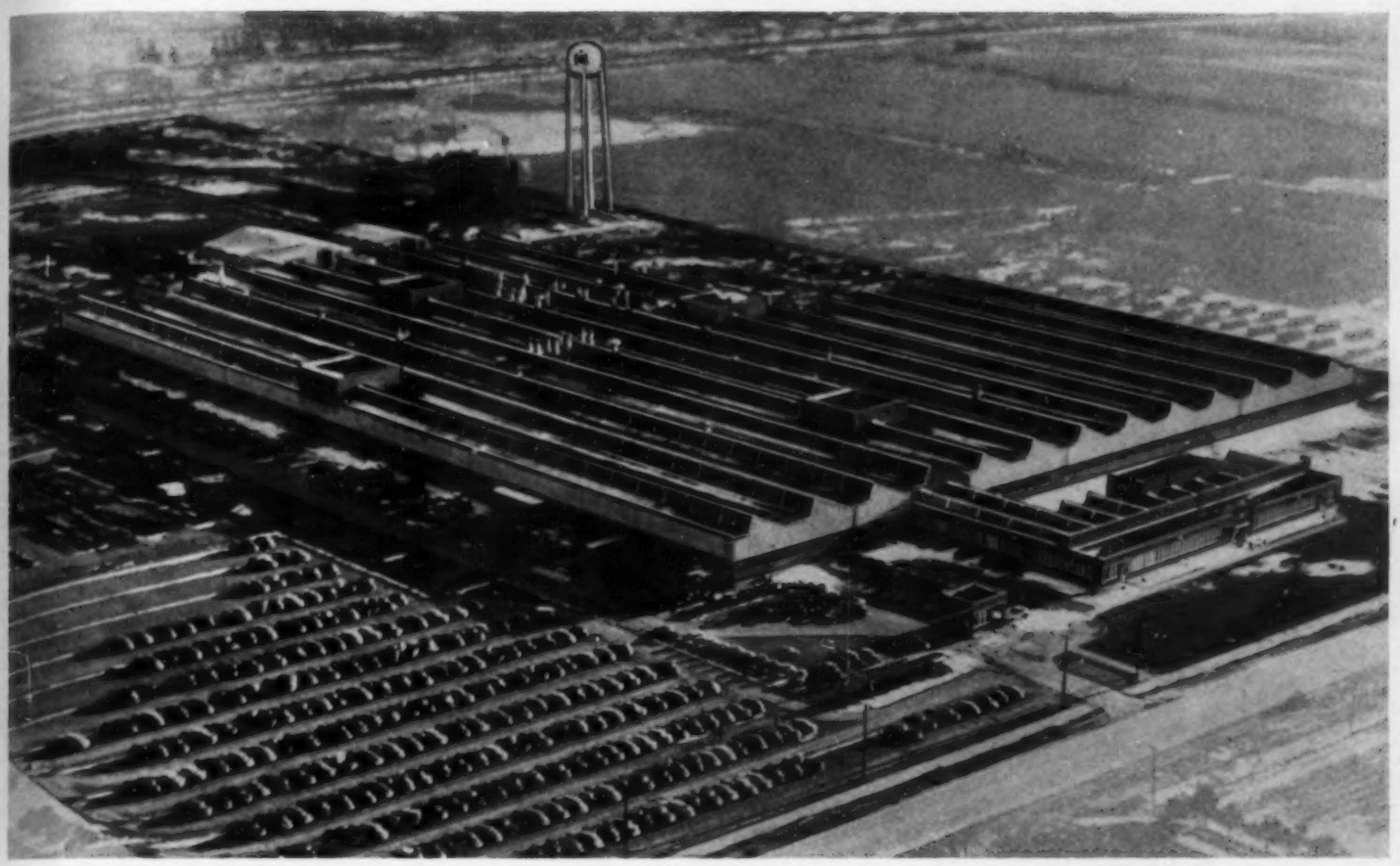
School buses serve districts where other transport is not available and special services are run for crippled and handicapped children.

N.F.B.

In 1904 Ford of Canada started assembly work in the former Walkerville Wagon Works on the bank of the Detroit River at Windsor. From that small beginning five modern factories have grown, spreading over a 240-acre site, and the plant is still expanding.

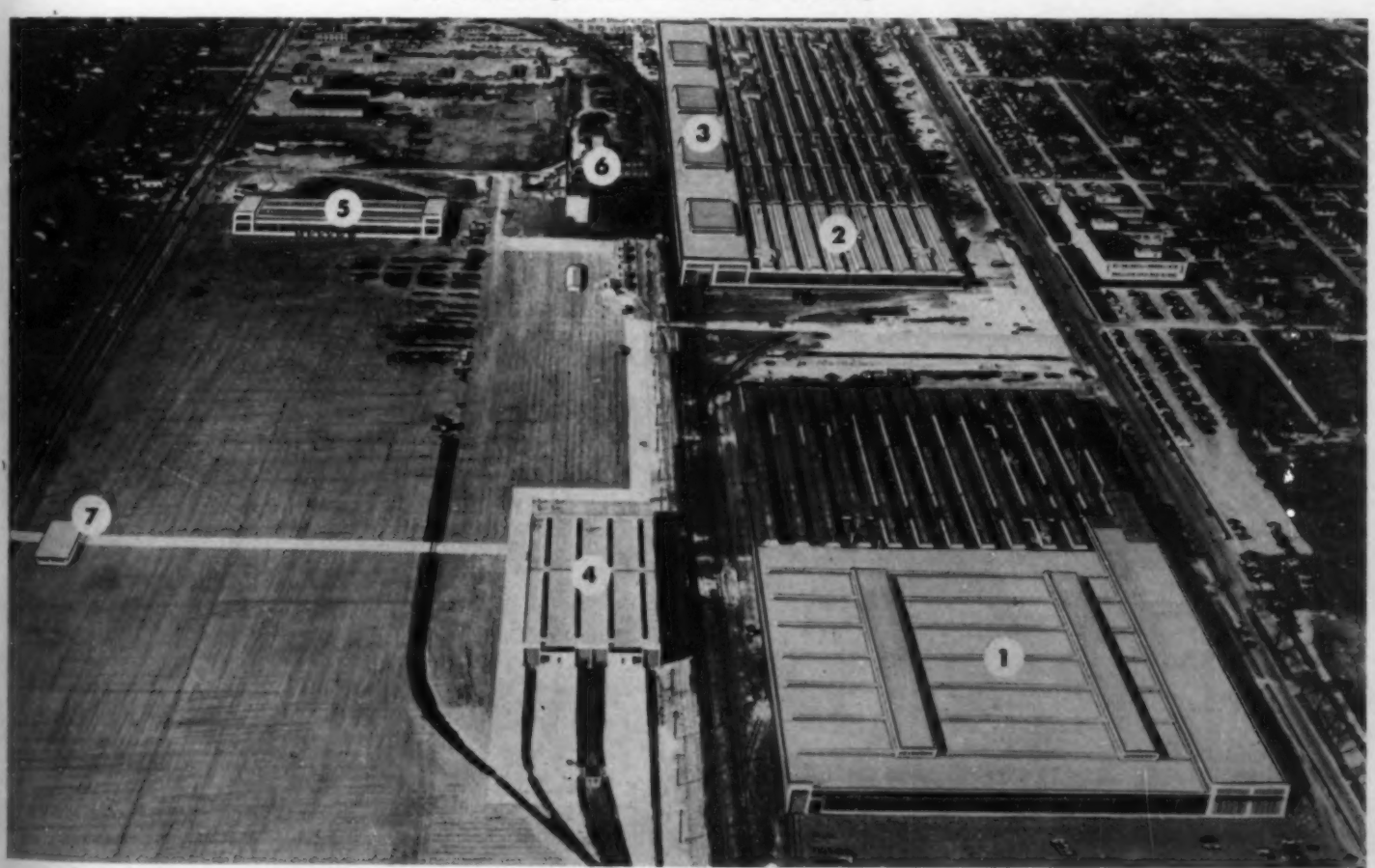
Air view of General Motors of Canada, North Plant, at Oshawa, Ontario. The main office building is in middle foreground. At the present time General Motors is producing Chevrolet and small Pontiac cars as as well as Chevrolet and GMC Trucks in this plant. The West Plant which builds the bodies for these cars is located immediately to the south west of the buildings shown below and it is connected to them by means of the enclosed bridge which is seen coming from the lower left of the picture.





Chatham Works of International Harvester Company of Canada Limited where International motor trucks are manufactured. This plant is one of the most modern in Canada devoted exclusively to the manufacture of motor trucks.

An artist's sketch of new buildings (under construction and planned) based on an aerial view of the Chrysler Corporation of Canada plant at Windsor. Shown are (1) addition to the engine plant, adjoining the present engine plant; (2) and (3) additions to the passenger car plant; (4) loading building from which rail shipments are made; (5) transport garage and experimental engineering building; (6) power plant; (7) entrance gate and watchman's building.



Workman clamps the back window frame of a new sedan so that it can be welded into place. In this body assembly department roofs, fenders, frames, doors, panels, etc. are brought together to form complete units. After cleaning the body is painted and moved to the final assembly line to be joined with the chassis.

A workman assembles the steering wheel on the column of a new model on the final assembly line. Co-ordinating the hundreds of items so that they arrive at the assembly line at the right time for the right car is a major planning accomplishment.

city-dweller and the suburbanite alike the opportunity to purchase in a small centre a complex group of commodities while parking only once.

It is the simplified and systematized parking which sets the modern shopping centre apart from any other type of grouped stores. Individual spaces are marked off for each car; there are "in" and "out" lanes, and in many cases uniformed attendants control the traffic on the lots.

In winter, the surface of the lots is usually mechanically scraped of snow and ice, and throughout the year there are employees available to help trundle the miniature cart-loads of purchases from the door to the car. All of these factors have completely revolutionized the routine of urban and suburban shopping.

No less than 65 per cent of motor cars in Canada are owned by families whose main wage-earner is paid less than $3.000 a year. Forty per cent are in the possession of families earning less than $2,000. Despite their modest incomes, 66 per cent in this latter bracket, according to the survey, paid cash for their vehicles. By contrast, car buyers earning more than $4,000 per year were credited with only a 3 per cent improvement in the cash-paying category.

These figures, more than any other, show how completely and incontrovertibly the automobile has entered and become part of the Canadian family economy in the modern age.

Automotive fact-finders invariably refer to the higher proportion of motor cars per capita in the United States as against the figure for Canada. One explanation is easily found in the lower cost of American automobiles, the lower rate of taxation of motor cars. More difficult to explain is that 65 per cent of the average Canadian's driving is directly concerned with earning a living, as against only 57 per cent for the average United States motorist.

The motorist, his driving customs and his bracket represent only one facet of the tremendous importance of the automotive industry in the modern Canadian scene. Among manufacturing industries, the automotive business itself ranks second only to pulp and paper in the matter of persons employed and total

wages paid. The number of persons directly in the production of motor vehicles in 1952 was 35,000 and they received in wages and salaries $132,000,000.

These figures, however, only begin to present the true picture of the importance of automotive manufacture to the Canadian economy. This mammoth industry purchases components from a long list of primary producers and feeder plants totalling approximately 350 firms, whose 148,000 employees earn more than $112,000,000 per year in automotive accessories and component parts.

For example, in 1952 the companies manufacturing metal parts for the Canadian automotive industry paid out in salaries and wages a total of $72,354,607, while the rubber industry making tires and tubes paid out an estimated $75,000,000, and the petroleum products industry, producers of gasoline, oil and other lubricants, paid its employees $44,794,793.

Then there are the more than 5,500 dealerships from British Columbia to Newfoundland which sell and service motor vehicles manufactured in Canada—not to mention the dealers who sell imported vehicles. Here again, a great family of 55,000 people is employed by these Canadian dealerships with a total wage of more than $132,000,000 a year.

Lumped together, the automotive manufacturers, the suppliers, and the dealers employ a total of approximately 240,000 Canadians full time, with a total payroll of more than $376,000,000.

Finally, there are the unnumbered thousands of Canadians who, while not engaged directly in the automotive industry or its feeder plants or dealerships, earn a healthy proportion of their annual salaries as a result of the existence of the Canadian automotive industry.

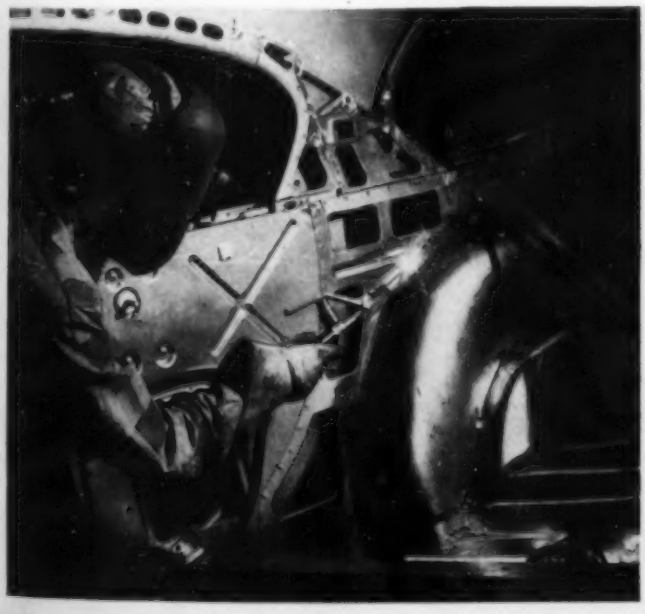
These figures, for a country with Canada's limited population, would be staggering even if they were static. But the Canadian automotive industry is expanding at a truly spectacular rate, and by the end of 1953 a total of more than $125,000,000 will have been spent in enlarging buildings and facilities by about 50 per cent of the existing figure.

Thus the Canadian automotive industry, from a tiny beginning after the turn of the century in such centres as Oshawa, Windsor, Chatham and Orillia, has grown into a huge activity which now produces more cars in an hour than were produced in the entire year of 1904. In Ontario (the Dominion's richest province) it has become the leading industrial activity.

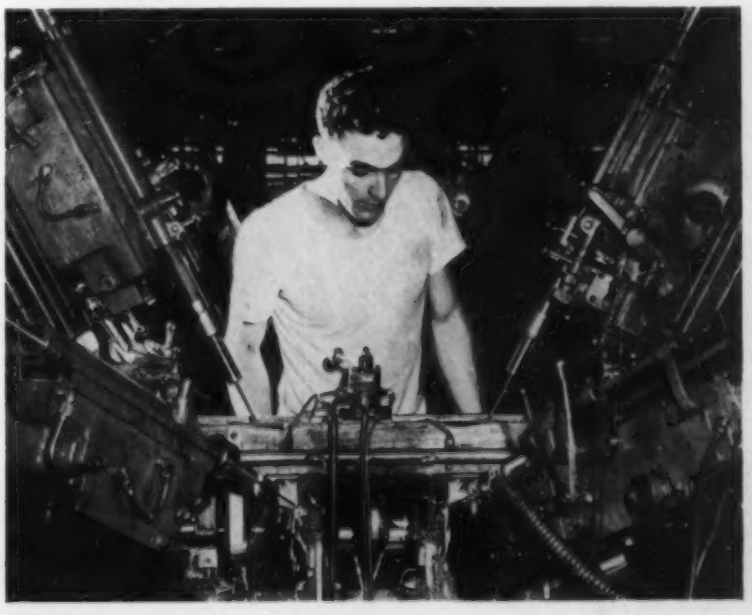
The product of this commercial colossus—the Canadian-built motor vehicle—has permeated the lives of our people at every level of income and activity to such an extent that existence without the automobile is something which the mind of the average Canadian simply could not comprehend or accept.

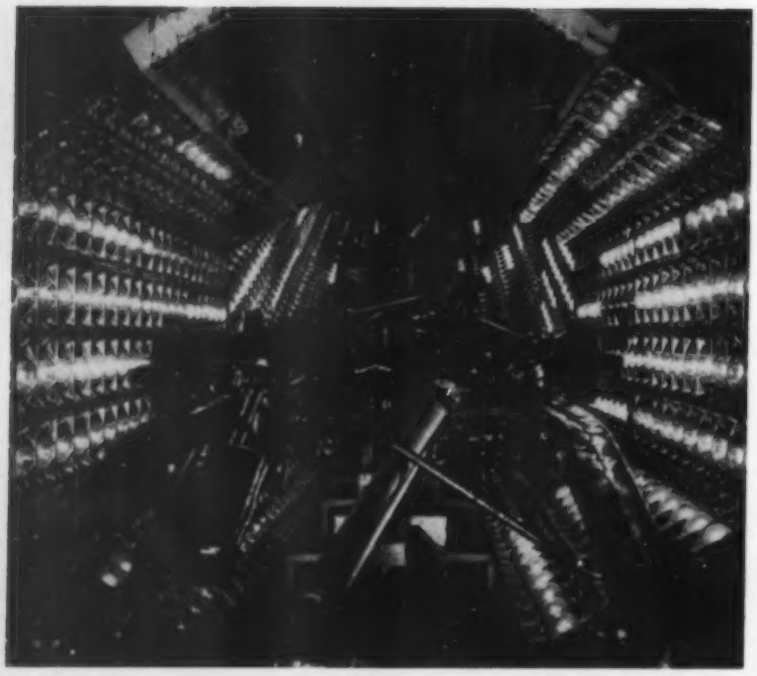
The commercial motor vehicle, too, fills an increasingly important and implementing role, permitting hundreds of new communities to spring up every year beyond the immediate

Arc welding is one of the key trades used in automobile body building and calls for well trained, careful workmen.



Multiple drilling machine in the hands of a skilled operator drills oil holes in crankshaft of a six-cylinder engine.





reach of railways as vast power and industrial projects are taking shape in the hinterlands of our growing nation.

The trucking business in this country is so young that its employees, for union purposes, are still referred to as teamsters. In 1915 there were only 533 trucks in the Dominion of Canada. In 1952 the number had reached more than three-quarters of a million.

The motor truck, too, is contributing tremendously to the exciting events taking place where Canada's frontiers are still being rolled back and where history is being written—in the Alberta oil boom, the developing of Labrador's iron resources, and the great project at Kitimat.

The farmer, too, leans heavily upon the motor truck. More than 50 per cent of all Canadian farm produce is sent to market by motor truck, including 90 per cent of all the milk, 60 per cent of the cattle, and 67 per cent of the hogs. So completely has motor transport taken over this aspect of Canada's great agricultural industry that the farm horse is disappearing even from the concession roads.

The tremendous potential resources of Canada's trucking industry were perhaps first fully realized less than five years ago when a total strike paralyzed Canadian railways, and all rolling stock was immobilized within a matter of hours. The trucking industry took over with such promptness and efficiency that for the duration not one Canadian was deprived of adequate food or drink or of the other necessities of life.

More recently, the passenger automobile demonstrated its ability to meet emergency during a strike of all tram and bus workers in the city of Toronto. Without hardship or marked inconvenience, the private automobiles of the metropolis—operating largely along their accustomed routes and on their private schedules—took Toronto's 300,000 workers to and from their places of employment promptly and in cases more comfortably than was

Top to bottom:—

New automobile body is sprayed with colourful paint. Each body receives one double coat of primer surfacer and three coats of enamel.

Newly painted chassis ride through infra-red paint-drying oven which contains some 3,000 infra-red lamps and can handle 50 chassis in an hour.

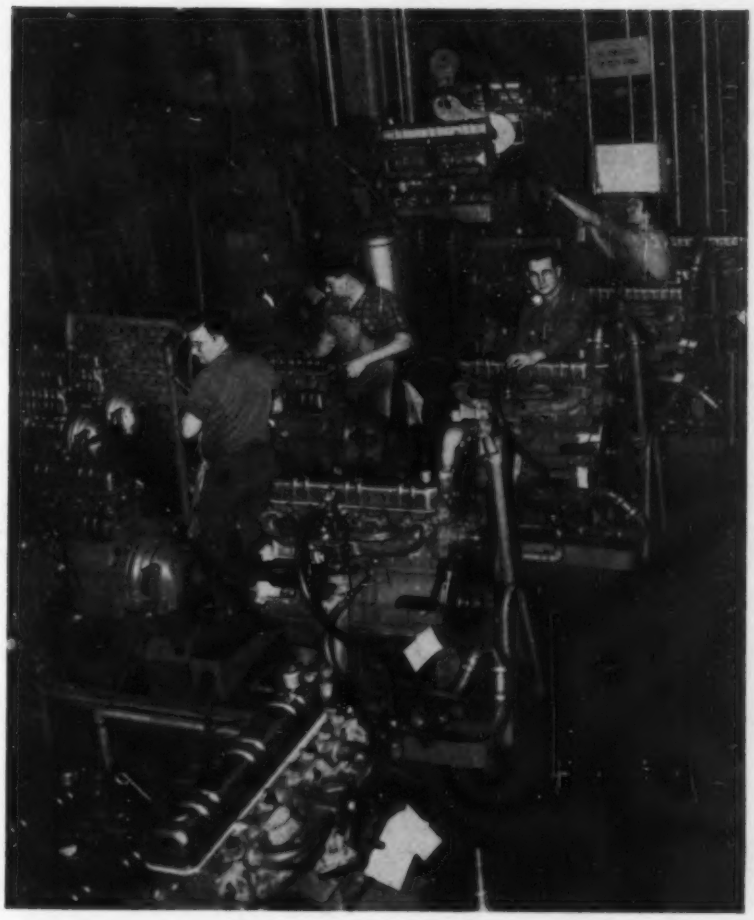
A new sedan is subjected to a high pressure water spray inspection to test dust and water proofing.

customary under commercial transportation.

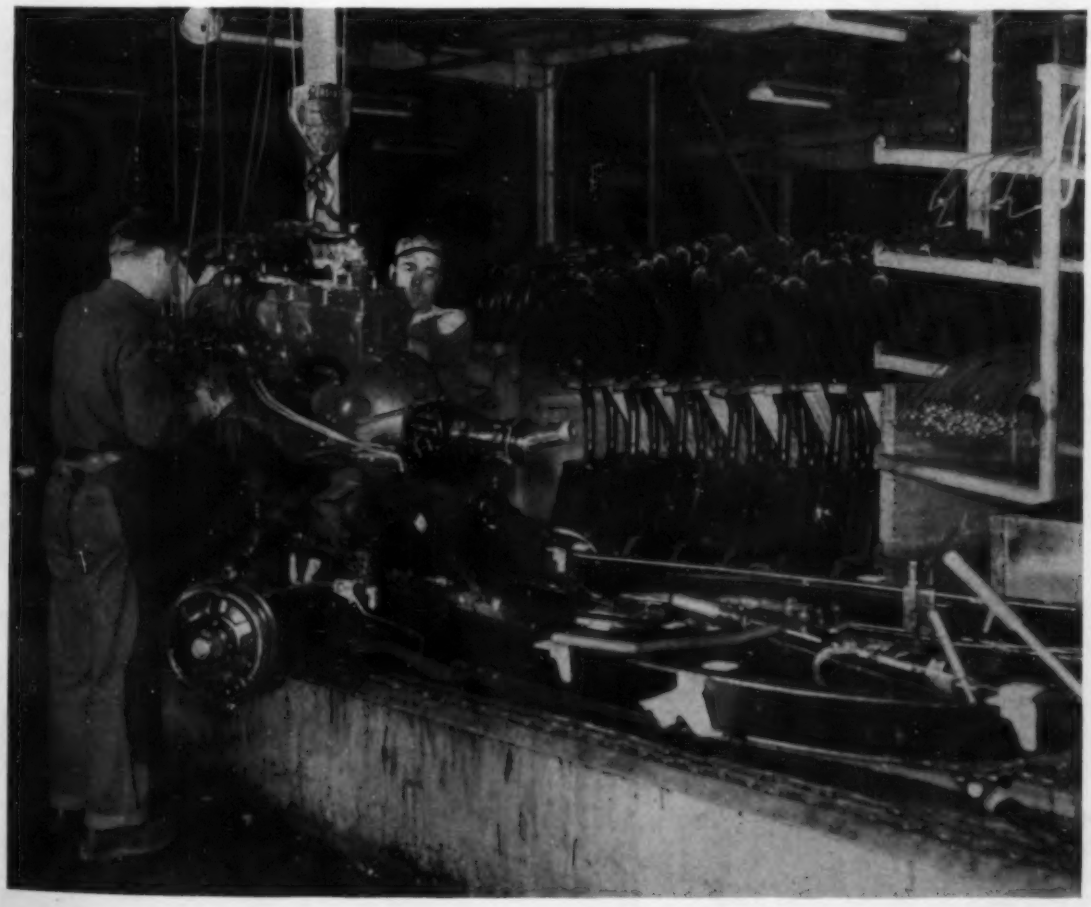
No matter how efficiently operated, however, motor vehicles would be unable to fulfil their vital role in Canada's industrial, social and economic picture if it were not for the roads, streets and highways upon which they operate. Here, again, the permanence of the automotive industry is recognized by the staggering sums spent on road construction and maintenance.

Striking evidence of the rate at which road-building has increased over earlier years—and also incidentally of the sky-rocketing expenditures on road construction—is offered by the following comparative figures for the Province of Ontario alone: during the 24 years from 1919 to 1943, the province spent $469,000,000 on all types of roads; during the next nine years alone (1943-52) the outlay was $500,000,000, and for the first eight months of 1953 it totalled more than $100,000,000.

Under the impetus of the automotive industry, a Dominion-wide network of roads such as we enjoy today has been created. And in the absence of the communication thus promoted, the Dominion would never have approached her present state of nationhood, nor would her people have attained the high degree of inter-provincial and inter-racial unity and understanding which is now one of her great strengths.



Beyond her own borders, too, Canada is benefiting tremendously from the so-called Motor Age. More, probably than any other



At top:—Careful workmanship together with a statistical quality control program help to ensure the sound performance of these Canadian built truck engines.

Motors being lowered on to chassis at a plant in Oshawa.

Opposite, first column, top to bottom:—

A general view of a radiator department at an Oshawa plant.

Photo shows finish of a body conveyor line where model is finished and inspected.

Assembling car bodies in the body build and metal finish department of a plant at Oakville.

Second column, top to bottom:—

An employee working on wiring harnesses.

Unitized bodies being moved to body decking operation; one is being dropped on to a chassis.

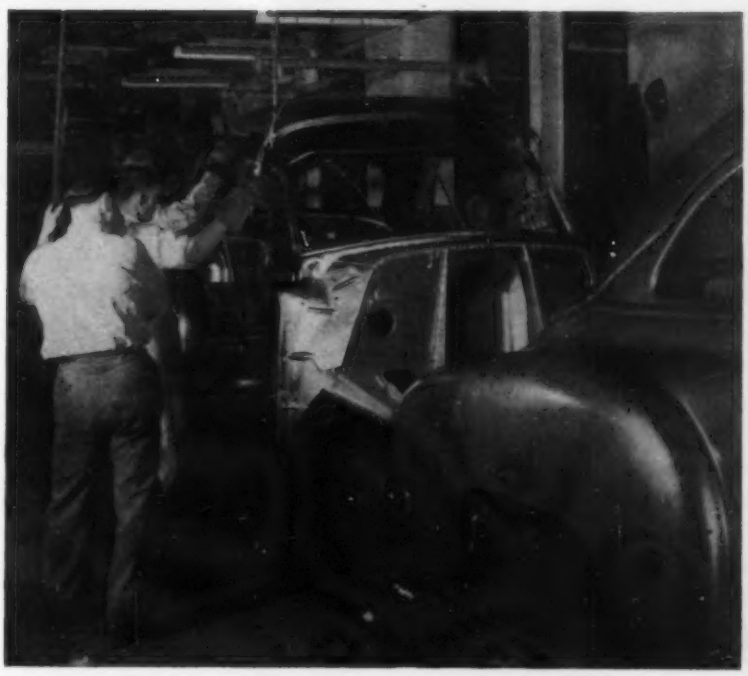
Cars leave the trim line and go under a subway to the final assembly line at the assembly plant at Oakville.

Right, top to bottom:—

Workmen installing a steel roof.

Body being lowered to the chassis assembly line.

Ford of Canada "put a roof on a farm" to create the largest plant under one roof in Canada, the assembly plant alone covering 32 acres. This Oakville plant produced 10,000 cars in five months.



factor, the automobile has "sold" Canada to the rest of the Western Hemisphere for what she really is—a modern industrialized nation in the forefront of progress, expansion and development. The American or European tourist, returning from a motor tour of Canada, is able to modify or entirely reject the distorted "Mounties and half-breeds" version which Hollywood persists in foisting upon a credulous public—a version which the ubiquitous comic-strips also find it profitable to exploit on both sides of the Canadian-United States border.

Yet despite its vital importance to the Canadian economy, the automobile business operates under difficulties not generally realized by the motoring public, or indeed by the consumer-public at large. Few, if any, other great Canadian industries are forced to absorb such a load of direct and indirect taxation while producing a commodity essential to the continuance of normal life in the nation.

An aerial view of a four-ramp traffic interchange on a highway near Toronto.

A familiar scene on the highways; new cars en route to dealers.

It is even more doubtful whether the average Canadian buyer of a new automobile has any conception of the proportion of his purchase-price which goes into taxation in one form or another.

A graphic example of the magnitude of this tax burden may be seen in the fact that in 1952 the Canadian automotive industry collected from its consumers for the government, a total of $138,500,000 in excise and sales tax in the course of the sale of its vehicles. This figure exceeds by $6,500,000 the total wages and salaries paid by the same industry to its 35,000 employees during that year. Whereas combined excise and sales tax on an average four-door sedan in 1939 was $61, today it is $362.

In addition to excise and sales tax, the Canadian motorist, whether he knows it or not, must pay further taxes which are present, although unseen, in the purchase price of his car. These include customs duties already paid on components and materials imported by supplier companies and the heavy tax imposed on the profits of the automotive companies.

This, then, is the Canadian automotive industry. This is the industry which, within half a lifetime, has put Canada on wheels and has made her the second most motorized nation in the world.

This is the industry which, despite heavy tax burdens that belie its importance and the essentiality of its product in the national economy, has been turning out some of the world's finest motor cars for nearly half a century, and has aided immeasurably in giving this Dominion her honoured place among the nations of the modern age.

Right, top to bottom:—

Heavy equipment on road construction work.

Road haulage plays a vital part in the economic life of Canada.

Trucks have many jobs on the farm; this one is being used in harvesting.

Archers of the Jungle

by HARVEY R. FRANTZ

Photographs by the Author

THE TROOP of capuchin monkeys were whistling noisily as they moved through the upper storey of the dense Bolivian jungle. Suddenly an answering whistle was heard from below. The troop stopped and jabbered among themselves while the leader cautiously called back. Again the call was repeated from the ground and, satisfied, the troop started down through the trees.

Hidden by a liana-draped tree a naked brown Indian with bright feathers plastered in his coarse black hair softly raised a large black bow. Fitting a long barbed-tipped arrow, he slowly pulled back the bow string while continually emitting a plaintive whistle. As the monkeys came closer to the ground, the females with the young hung back while the more adventuresome males advanced timidly.

Suddenly they stopped. Chattering nervously, some of them started to move slowly backward. As they did, the arrow was released and, flying through the small openings in the green foliage, struck the leader in the chest bowling him off his perch. In an instant there was bedlam in the forest as the squealing and howling monkeys tore up through the trees in their effort to get away.

As the noise of the retreating monkeys became fainter in the deep bush, the hunter stepped from behind the tree and walked over to where the monkey lay with his paws clutching the shaft. Pulling the arrow out through the back, he looked it over, and, satisfied it could be used again, laid it beside his bow. Picking up the monkey by the tail with one hand and with the other holding the bow and arrows over his shoulder, he headed back to camp.

In place of the monkey, which is a delicacy to the Indians, the objective of the arrow could have been an oil prospector, rubber worker, or even a missionary. As late as 1944 five American missionaries were killed when they entered these unknown jungles of Eastern Bolivia.

The Siriono Indians, one of the wild tribes inhabiting this part of Bolivia, still shoot on sight anyone entering their country. These savage and naked Indians use the largest bow and arrows in the world.

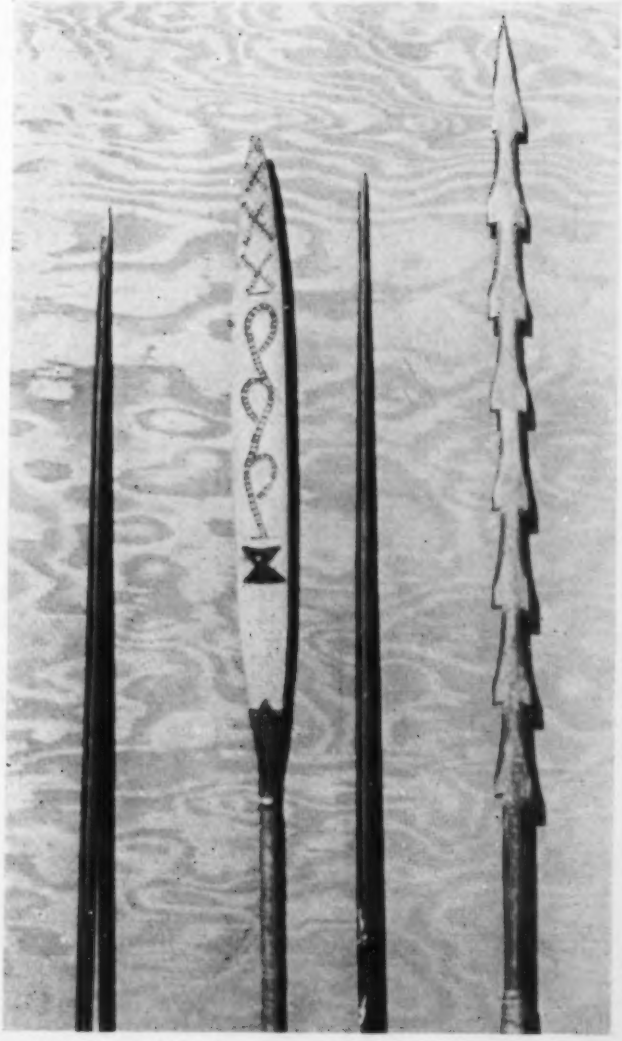
The bows are made from the hard black layer of wood found in the chonta palm. After the tree is felled, a section about four inches wide and seven to nine feet in length is cut out. This stave of wood is worked into a bow using a mollusc shell to plane the wood into the desired shape. The bowstring is made of bark fiber twined into string by the women.

The arrows are of a river reed and are of two types. Those with a chonta head are seven to nine feet long while those with a bamboo head average from eight to ten feet. The chonta head arrow is barbed and is used for small game. The head of the bamboo-tipped arrow is shaped like a lance or spear and is used for larger animals. The heads are tied on to the shaft with a cotton thread, locally made, and covered with hot beeswax to prevent unravell-

The Siriono Indians are very skilful with their unusually long bows and arrows. These two hunters are returning with their bag of coati.

The Chama Indians of the Beni River region of Bolivia have adopted the very long bow and arrow of their neighbours, the Sirionos.

Various types of arrows used by the Sirionos. From the left:—arrow used for fishing; broad point for large game; long tapering point for small game; large barbed point also for large game.



This jungle boy may know nothing of the blessings of civilization but at least he looks happy and well fed.

These Indians are nomads who wander through the jungle in search of game, both furred and feathered.

ing. The feathers are also fastened to the shaft with thread and hot beeswax.

These Indians do not use poison on their arrows as do the tribes north of the Amazon. The devastating effect of such arrows when they hit make poison unnecessary.

The Siriono Indians are nomads and continually wander in the jungle in search of game. With their bow and arrows they are able to kill monkeys, large birds, giant anteaters and the wild pig of the forest along with the numerous smaller mammals found there. The tribes that inhabit the forest adjoining the open pampa country also hunt the pampa deer, the South American ostrich and occasionally the jaguar.

Their only other weapons are chunks of wood used as clubs and occasionally a rusty machete captured from some intruder in their country.

As the heavy underbrush and high trees make hunting extremely difficult, the game is either stalked or else attracted by imitating the cry of the animal. The Indians are very adept at this and are able to entice the unsuspecting animals into range with comparative ease.

Occasionally game will be spotted high in a tree out of arrow range. If it is an animal that will remain there, such as a sloth, the hunter quickly puts his bow over his shoulder and with the aid of vines and lianas climbs up into the tree. Moving as close to the animal as he can without disturbing it, he stops and signals his companion on the ground. His companion then fits an arrow to his bow and shoots it with just enough force to reach the limb the hunter is crouched on. As the arrow goes by the hunter reaches out and grabs it. Swiftly fitting it to his bow, he in turn shoots the animal which is now within arrow range.

These Indians even use their bow and arrows for fishing. Standing in clear shallow water they wait until a fish swims near, then pin him to the bottom with a barbed arrow. If the fish are feeding along the bank, the fisherman climbs out into the branches overhanging the water and shoots the fish as they near the surface. To retrieve his catch, he merely reaches down and pulls up the arrow from the bed of the stream with the fish impaled on it. Crocodiles, when surprised on the bank or in the shallow water, are killed by shooting them through the eye.

Although the Winchester .44-40, the Bolivian army rifle and the shotgun have penetrated the Bolivian jungle they have not replaced the bow and arrow of the Siriono. The Indians have little or no contact with outsiders, including Bolivians as well as foreigners, and they keep to themselves in the deep bush. Occasionally a prospector or hunter invades their territory but he soon finds his gun is no match for the whistling arrows that come out of nowhere.

These Indians, one of the few bands in the western hemisphere, still living entirely by the bow, ask only to be left alone to roam the jungle and hunt as their forefathers have done for centuries.

EDITOR'S NOTE-BOOK

Dr. W. J. K. Harkness (*Fish and Wildlife Management in Ontario*), after a distinguished academic career in universities in the United States and Canada, entered the public service of the Ontario Government. Since 1946 he has been chief of the division of fish and wildlife of the Department of Lands and Forests. — Adelaide Leitch (*The New-Old Handicrafts of Norway*) is a Canadian writer and photographer who has travelled extensively in Canada and Europe. Now Mrs. John Rennie, she is continuing her travels in the Caribbean. — Oliver Master (*Canada's Export Flour Trade*) is Assistant Deputy Minister of Trade and Commerce in the federal government. — Kenneth MacGillivray (*Canada on Wheels*) has long had a special interest in automotive affairs. His own practical experience includes driving more than 100,000 miles in Africa and Europe in the course of war service and, in 1946, being one of the two-man team that made the first trans-Canada motor trip without touching United States soil, travelling from Lunenburg, Nova Scotia to Vancouver in a little over seven days. — Harvey R. Frantz (*Archers of the Jungle*) is a consulting forester who has specialized in eastern United States and Latin America. His explorations for rubber in the Amazon basin brought him into contact with many native tribes.

* * *

AMONGST THE NEW BOOKS

The Way of the World

by George H. T. Kimble

(George Grady Press, New York. $2.50)

The fifth presentation of the Rushton lecture series, by Dr. George H. T. Kimble, under the title *The Way of the World* should do much to rescue the science of geography from the neglect to which it has too often been relegated, and to re-establish its high status as a means of understanding the most urgent needs of today. In the first lecture, *The Strength of the Earth*, Dr. Kimble dwells upon the limitless resources in earth, air and water if mankind can learn to conserve as well as consume the untold riches at his command. The statements on the resources of the sea, both from the edible and the mineral standpoint are of remarkable interest. The second lecture, *The Perseverance of Man* shows us the apparent indestructibility of the human race in the face of most adverse conditions throughout the ages. In spite of the enmity of Nature and of his own kind, he still has sufficient grip of his geographical environment to survive. The third lecture proves that he not only survives but has the resilience to seize the very forces which threaten his destruction and bend them to his will. This has led him up the steep path of experimentation in all branches of science to find out how to improve his lot. But the very road which leads to improvement under one set of geographical conditions, may equally lead to disaster in another. Interference with the course of Nature may make the earth bring forth a hundredfold or it may result in complete devastation. Those who teach and those who study geography must not fail to bear in mind some of Dr. Kimble's concluding words, "To seek first the Kingdom of God is not only the beginning of wisdom, but the precondition of survival."

S. SEELEY.

* * *

The Weald

by S. W. Wooldridge and Frederick Goldring

(Collins, Toronto. $6.00)

This book presents a most scholarly portrait of one of the best known and best loved districts in England. The authors define its extent in these terms: "*Andredsweald* was the name given by the Anglo-Saxon invaders of Britain to the great tract of forest, about a hundred miles long, and forty miles broad, lying between the chalk hills of the North and South Downs." It is still one of the most heavily wooded regions in Britain, and has an astonishing variety of interest to offer the geologist, botanist, archaeologist historian, artist, farmer, or mere wayfarer. The geology upon which its soft and undulating contours are based is set forth with care and helpful diagrams; technicalities are avoided even in speaking of the richness of the fossil beds.

The variety of the soil has fostered an abundance of plant and bird life, unlooked for in so limited a district, but an excellent chapter on the hydrology of the Weald explains the fertility which supports and sustains such natural features as Ashdown Forest with its profusion of vegetation and animal life. The wealden oak woods, birch woods, heathlands, and chalk grasslands are dealt with in a manner that brings delight into serious geographical study. The early human settlements, the meaning of the original place names, the development of hand industries through the centuries are all combined with the scientific aspects in a way which brings home to us the unique and curious unity which is so distinctive a feature of the Weald. Nor has this unity been lost with modern urban development, and the progress of mechanized agriculture. It is a well populated district, and yet there is a friendly solitude in its woodlands and by-paths which seems to offer a familiar welcome to stranger and native alike.

The book is beautifully illustrated, and some of the fine coloured pictures recall affectionate memories for Kipling's descriptive line, "The dim, blue goodness of the Weald."

S. SEELEY.

Russian Influence On Early America

by Clarence A. Manning

(Library Publishers, New York, $3.75)

Those who are trying to get an intelligent grasp on the present causes of world unrest, should be sincerely grateful to Mr. Manning for his clear and succinct account of Russian America, a term which to the average reader merely suggests vague associations with Alaska. But Mr. Manning reveals to us in full the bold and imperial conception which animated Russia in the eighteenth century with dreams of an empire extending from Bering Strait southward to San Francisco, possibly even to Mexico. As Russia already dominated the eastern coast of Asia, she aspired to turn the Pacific Ocean into a Russian lake and at times she came within measurable distance of achieving her object. But although the Russian explorers had forced their painful way all across Siberia, they omitted to calculate that the British might make a similar advance westward across Canada. Also they misunderstood that the effect of the Louisiana purchase from Napoleon in 1803 would be to push the American settlements out towards the Pacific coast. In order to counter this danger to their own trade, the Russians sought to antagonize Great Britain and the United States by every means in their power. It was always to their interest that the two great branches of the Anglo-Saxon race should be at enmity. At the close of the American Civil War the Russians felt that they could best foster their own aims by selling the territory of Russian America to the United States. In June 1867 the Russian flag was ceremoniously hauled down for the price of $7,200,000, most unwillingly paid by the American Congress. Not till the discovery of gold in the Klondike did they realize how cheap had been their purchase.

One cannot but admire the dogged attempts by which the early Russian explorers sought to make their rulers' dream of world domination into a reality. They toiled all across Siberia, built their own ships at Okhotsk and then set sail, very ill-equipped, into the unknown and icy waters of the northern Pacific; they established permanent trading posts in Alaska and trafficked down the coast to California. In the face of cruel difficulties they made Russian America a living reality which faded out less than ninety years ago. Students who wish to get at the bed rock of present misunderstandings in world affairs, will do well to study this book carefully. A good map would have been a very material help in appraising the situation.

S. SEELEY.

* * *

Trees and Trails

by Clarence J. Hylander

(Macmillan, Toronto, $3.50)

This book, the second in a new series, is addressed, somewhat unusually perhaps, to young adults. For such a reason alone, if for no other, such a series is welcome, helping as it will to bridge the wide and difficult gap between the boy who is "interested in natural history" and the serious scientist.

(*Continued on next page*)

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There are, we learn, about seven hundred species of trees in the United States, but they are not all discussed here. Rather, the plan has been to arrange them by geographical areas, such as trees of the northern forest, and trees of the Pacific coast forest, and treat each of these as a distinct ecological unit.

Means of identifying trees are mentioned and there are interesting notes on various, woods, their uses, the use of bark for dyes, the edibility of the fruits, and other information of this kind that is all too frequently omitted from more learned books.

Canada, sadly enough, is often ignored in showing the distribution of species of trees. We are told, for instance, that the Madrona (*Arbutus menziesii*) is "found *only* along the Pacific Coast, from northern California to Washington". Actually, it thrives and is much beloved in southern British Columbia along the coast and the restricting "only" that I have italicized is misleading. The lack of an index is another irritating omission. True, there is a list of trees arranged alphabetically by the English name of the botanical family to which they belong, but who would think of looking under Beech to find the Oaks, or under Rose for Black Cherry or Mountain Ash? Certainly not a young adult, who is not yet an experienced botanist.

Shrubs, such as sumac and buckthorn, are not mentioned for, after all, a line had to be drawn somewhere. The sketches and photographs are good. Today, any popular book on trees has to meet fierce competition. This one has as good a chance of survival as any.

DOUGLAS LEECHMAN

* * *

Icebound Summer

by Sally Carrighar

(McClelland & Stewart, Toronto, $4.50)

We are told that Sally Carrighar "began her adult years as a writer of radio dramas and feature articles" and, indeed, traces of these styles of writing are still to be seen in her work. Her first book, *One Day on Beetle Rock*, had excellent reviews and so did the next, *One Day at Teton Marsh*. There's no doubt that they made good reading, and so does this one, but the more cautious reviewers were careful to hedge a bit and used such phrases as "popular animal stories" and "fictional natural history". One must admit the justice of such criticisms, and in this book too, though we appreciate her sympathetic approach to the animals of which she writes, her attention to detail, and her genuine desire for accuracy, there is just too much blatant anthropomorphism for an adult reader.

The Foolish Fox, for instance (page 62) "quickly recognized his new situation; he had lost his food supply and he himself was in the wrong place, inside Norton Sound, which could become a big trap. He would go back at once onto Bering Sea". Not so foolish a fox after all, and one unusually well versed in white man's geography. And that is by no means a solitary example, the book abounds with it.

There are chapters on a "rogue" walrus whose abnormal characteristics were to be attributed to a psychological shock he experienced in his childhood, the love-life of the humpback whale, the migration of the arctic tern, the suicidal march of the lemmings, and so on.

Some parts are well written, others are long drawn out and tedious. There's a good deal of amateur meteorology, with such passages as "spiraling out of the high-pressure area, winds were beginning to stir. Moving clockwise they were starting to circle the stagnant center." There's no objection to a little bit of this, now and then, but too much of it becomes boring. The value of *Icebound Summer* is in inverse proportion to the reader's knowledge of biology.

DOUGLAS LEECHMAN

* * *

West Over Sea

by D. D. C. Pochin Mould

Clarke, Irwin, Toronto, $4.75)

Miss Pochin Mould, the author of *West over Sea*, is one of those rare and fortunate people who take an interest in everything they see, who feel the beauty and romance of

commonplace things, and who, through their intellect and their emotions, manage to get a great deal out of life.

West over Sea is a romantic title in itself, and the origin of the phrase no less so, for these were the words used by the writers of the Viking sagas when they spoke of their heroes going off on a raiding adventure in the Outer Isles—"West-over-Sea". The lives of the people of these wild islands off the north-west coast of Scotland, their history, their skill in extracting even a bare living from so reluctant a soil, the saints who lived their lives of lonely piety on remote islets, all combine to produce an excellent account of the Outer Hebrides.

Their every aspect is considered: Botany, archaeology, place names, topography, geology, transportation, farming, everything is grist that comes to her mill. True, one tires at times of detailed descriptions of scenes that, we fear, will always remain unseen. There are passages where less Gaelic and more English would make things easier for the Sassenach reader, as for example, "It was a ceilidh story that took me to the stravaig from The Clisham to Mealisval", which, to me at any rate, is almost meaningless. A glossary of Norse and Gaelic words would have been useful, and so would a map, for though the endpaper chart published about 1755 is interesting, it does not help the modern reader very much. The photographs are excellent, and one can only regret that there are not more of them. The last few chapters, dealing with general topics rather than descriptions of single areas, are to my mind the most readable part of a valuable and useful book.

DOUGLAS LEECHMAN

* * *

Kalahari Sand

by Frank Debenham

(Clarke, Irwin, Toronto, $3.00)

The author, Dr. Frank Debenham, is an example of the type of scientist, all too rare in these days of ultra-specialization, who is interested and reasonably competent in all things that impinge, even remotely, on the subject he has under investigation. In this particular book, he examines the possibility of establishing a cattle ranching industry in the Kalahari desert of Bechuanaland in south-western Africa, but his observations take account of far more than the water supply which is his chief concern, or the native-owned cattle already there. He is interested in the game and how it survives the dry season; the natives and their ways of obtaining water, such as sucking it up from below the dry surface sand; the strange plants of the desert and their adaptation to long periods of desiccation; to methods of driving a heavy motor truck through loose sand, and so on.

Naturally, all this makes fascinating reading, as does any account of desert country, far more so for some unaccountable reason, than do descriptions of the most lush jungles. Nor is the fascination much diminished by the author's style which tends at times to be a little obscure and pedestrian. The book is well illustrated, not only by photographs, but also by clever little sketches presumably by the author and maps on which the routes taken by the expedition are indicated, though not, perhaps, as clearly as they might be.

The general conclusion arrived at is that there may possibly be enough water below the surface sand or in the basement rock to supply the cattle that could be grazed if the water proves available. There is no doubt that the Kalahari, even in the best areas, is marginal pasture land, that native cattlemen could not possibly make a go of it, and that private ranchers could not provide the large sums needed to finance the expensive preliminary surveys that would be necessary to find water.

The data obtained show that the Kalahari varies in its annual rainfall; that it was probably once wetter than it now is; and that it may also have experienced even drier periods. To a lay reader, this would suggest that the 260-year solar cycle is involved in its shifting fortunes, though this hypothesis is not advanced by the author. One is left with the feeling that it would be wise to turn to some other region where success would be less expensive and more probable.

DOUGLAS LEECHMAN

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Latvia: Cross Road Country

Edited by Edgars Andersons

(Latvju Gramata, Waverly, Iowa, $12.50)

A well-illustrated and well-produced account of the Latvia of today. It is unusually complete and is the work of a number of authors who discuss the country, the people, and their history. Statistical tables show the present state of industry and commerce, education and aesthetics, and a careful and extensive bibliography has been compiled.

Such a book is something for so small a country to be distinctly proud of and, though few people will read it from end to end, it should find shelf room in every geographical library. The editor was perhaps a little too sure of his command of idiomatic English, and one is constantly reminded of this by minor peculiarities of style, especially, strangely enough, in the matter of the presence or absence of so simple a word as "the".

DOUGLAS LEECHMAN

* * *

Canoe Trip Camping

by Ronald H. Perry

(Dent, Toronto, $2.50)

That the author, Ronald Perry, knows his subject there can be no doubt at all for his fame as a canoeman is widespread, but a good many adult readers are likely to regret the manner in which he has presented it here. The coy humour of the drawings, the hurried and careless writing, and the lapses into sub-standard English all suggest that the book is addressed to an adolescent audience and not a particularly intelligent one at that. After reading it, I wondered how the old *mangeurs de lard* of the fur brigades managed to survive a single season. Did they always remember to wear a hat, and did they avoid over-exposure and over-exertion? I doubt it.

DOUGLAS LEECHMAN

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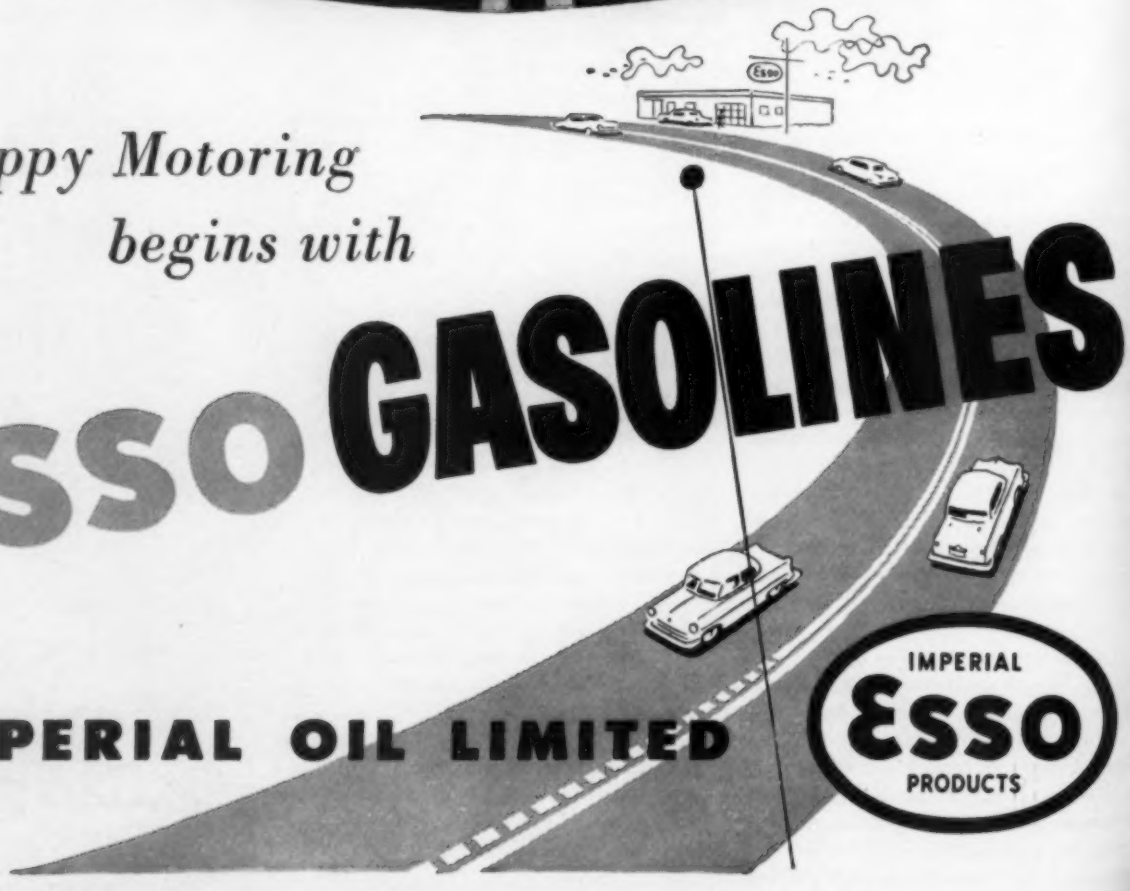

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